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23 July 1985

East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

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EAST EUROPE REPORT

ECONOMIC AND INDUSTRIAL AFFAIRS

CONTENTS

DEVELOPMENT OF POWER INDUSTRY BY 1990 OUTLINED

Sofia ENERGETIKA in Bulgarian No 2 1985 pp 3-8

[Article by engineer Dimitur Iliev, chairman of the Energetika Corporation: "The Bulgarian Power Industry During the Ninth 5-Year-Plan"]

[Text] Building the Bulgarian People's Republic's power supply is a clear example of the possibilities of the socialist path of development. During the last 4 decades after the socialist revolution of 9 September 1944, and espedially after the April Plenum in 1956, the Bulgarian Communist Party and the government have devoted deserved attention to power supply, as its development proceeds at ever-increasing rates.

In a comparatively short historical period, the energy industry has overcome its backwardness, reached the level of developed European countries, and is now ranked with the leading nations which have adopted the achievements of scientific-technical progress. In 1984 the production of electric energy in the nation reached 44.6 billion kWh, 28.5 billion produced by atomic power. With its specific electric consumption of 5240 kWh per inhabitant, Bulgaria is more than 2.92 times higher than the world average and has reached the figure of the developed countries (Figure 1). And in the area of specific energy consumption of around 5 tons of conventional fuel per inhabitant, it is already more than twice the average for the world. The production of coal reached 33.9 billion tons in 1984 and the production per capita places our country among the top 6 in the world. Bulgaria now occupies first place on the planet in the relative percentage of production of electric power from low-caloric solid fuels.

During the Ninth 5-Year-Plan the general line for the development of the Bulgarian power industry will be determined by the resolutions of the 12th Congress of the Bulgarian Communist Party and new formulations developed by Comrade Todor Zhivkov after the congress, as well as the announcement of basic directions for further development and expansion of economic and scientific-technical cooperation between the nations which are members of the CMEA made by the leaders of the socialist nations in Moscow in June 1984, in addition to further cooperation with the USSR and other fraternal socialist countries.

The development of the power industry in the Ninth 5-Year-Plan is linked to two basic policies:

1) further strengthening of energy independence for our nation through expansion of the utilization of local energy resources, rapid construction of

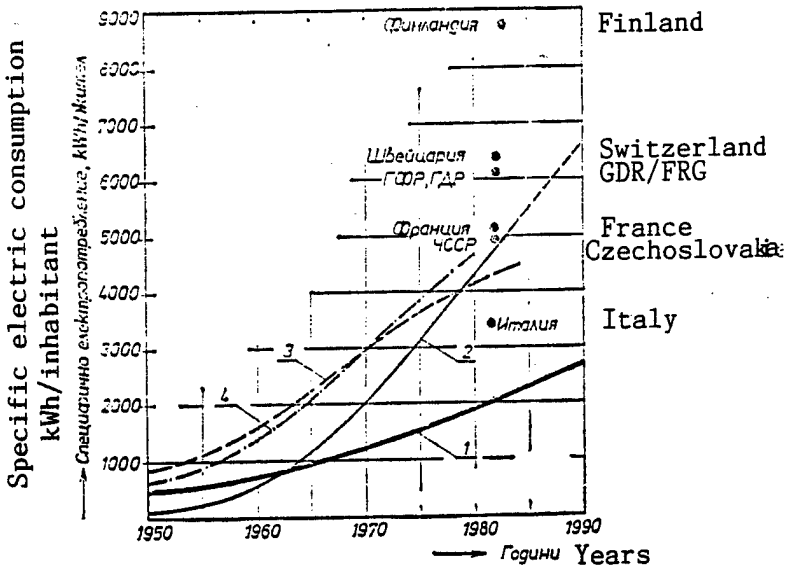


Figure 1. Specific consumption of electricity in Bulgaria and other countries. 1. Average for the world. 2. Bulgaria. 3. World average without USSR. 4.USSR

nuclear power capabilities, and utilization of effective programs for saving energy;

2) broader application of worldwide and Bulgarian achievements in scientific-technical progress.

Nuclear power is foreseen as maintaining our leading positions in the general development of the power base. Nuclear power plants will increase their share of the production of electric power from 28 percent at the end of 1985 to 44 percent in 1990, to over 50 percent in 1995. The qualitative changes will be even more substantial. Nuclear power today is entering a new stage in its development, through implementation of the latest revolutionary achievements of technical progress. At the Kozloduy nuclear power plant, a unique VVER-1000 nuclear reactor is being built, a giant of Soviet nuclear machine building, with greatly improved technology, technical resolutions, construction and capacity, in comparison with the existing VVER-400. The Bulgarian People's Republic is the first socialist country to build such a nuclear power block outside the USSR. The new generation of Soviet VVER-1000 reactors will provide the basis for the development of our nuclear power plants at Kozloduy and Belene, where we foresee operating 8 power blocks of this type by the year 2000.

A qualitatively new stage in the utilization of nuclear power will be its application to central heating systems for the nation. During the Ninth and Tenth 5-Year-Plans, first the Kozloduy, and then the Belene plant will supply central heating to Kozloduy, Miziia, Svishtov, and Belene. In terms of the further development of central heating systems based on nuclear capacities, we foresee in the near future beginning the first nuclear heating plant in our country, in the capital, with an initial heating capacity of 500 MW for each of the 2 blocks, which will increase at a later stage to 2,000 MW.

The development of coal output will be attained chiefly through the use of intensive factors: reconstruction, modernization, expansion and perfection of

existing mining capacities through the application of the most modern mechanized and automated coal mining complexes, mechanization, and technology. We plan to expand the application of comprehensive mechanization at the underground mines and to increase the efficiency of heavy mining and transport mechanization at the open pit mines. Automation of the processes and robotization of the heaviest operations will be implemented more broadly for further reduction of the difficult and unattractive manual labor.

Mining local coal is one of the basic directions in perfecting the structure of the fuel-energy balance and the further satisfaction of the needs in our nation for energy resources. The general output of coal must rise from 33.9 million tons in 1984 to 45.4 million tons in 1990, with the basic additional growth to come in the form of lignite at the Maritsa-Iztok complex (Figure 2).

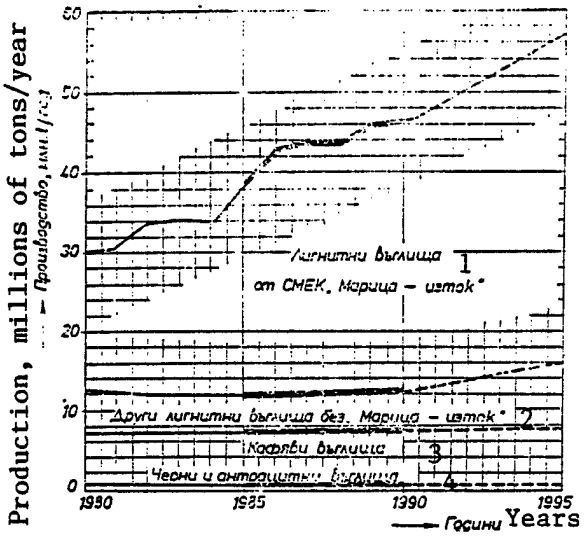


Fig. 2. Development of Coal Output

1. Lignite coal from Maritsa-Iztok Economic Mining and Power Co. 2. Other lignite coal without Maritsa-Iztok. 3. Brown coal. 4. Black and anthracite coal.

Priority development in the future will be reserved for open pit mining of coal, which will permit the recovery of new electric production and heating capacities: the 210 and 450 MW power blocks at the Maritsa-Iztok complex, municipal heating plants in Pazardzhik, Stara Zagora, and Khaskovo, and new heating plants at a number of okrug centers and other cities. What we have in mind most of all is rapid development of capacities at the Maritsa-Iztok Complex, where the output of coal must reach 33.5 million tons in 1990. During the Ninth 5-Year-Plan, we plan on introducing 6 million tons of mining capacity, 3 million tons per year each at the Troyanovo-Yug and Troyanovo-Sever mines.

Significant development will also be obtained through underground mining. At the Marishki Baseyn Economic Mining and Power Company they plan on obtaining 800,000 tons of new capacity at the Zdravets mine for supply to the Khaskovo thermoelectric power plant and growth in the central heating capacities of the Maritsa 3 thermoelectric power plant. At the United Bobov Dol mine, the output in 1990 should reach 3.2 million tons with the introduction of 540,000 tons of new capacities in the Babino, Ivan Rusev, and Mlamolovo sectors. This

output should be secured chiefly through highly mechanized and automated coal complexes with minimal utilization of manual miner labor. We foresee increasing the output from the Cherno More mine with the introduction of 600,000 tons of new capacities at the Cherno More 2 mine.

At the Nedelishte pit of the Bolshevik mine, they plan on introducing 600,000 tons of new capacity to replace falling capacities and to begin its reconstruction with the aim of increasing the output to 1.2 million tons per year in the next few years, for supply to the Pazardzhik thermoelectric power plant and other consumers. During the Ninth 5-Year-Plan construction will begin on the Chukurovo underground mine to replace falling capacities at the open pit of the same mine. Construction of new heating capacities in Blagoevgrad and Kyustendil requires modernization of the Bistritsa mine and the Oranovo pit to increase their productivity.

Production of briquuettes is foreseen remaining at the 1.4 million ton level, while it is imperative to increase their quality and to change the way they are supplied to the consumers.

During the Ninth 5-Year-Plan we must resolve questions related to the development of coal from the Dobrudzha find and the Elkhovo mine.

The adoption of new technologies will be maintained as the main direction in the development of thermal energy. The large-scale implementation of Bulgarian technology for direct burning of low-quality local coal will be continued. Based on this, we foresee the introduction of two new blocks, of 210 MW each, at the Maritsa-Iztok 2 thermoelectric power plant, at the end of 1988 and 1989, after the construction of the first expansion of this plant with similar equipment. Also in 1988-90 and also at the Maritsa-Iztok complex, we foresee construction beginning on new power blocks with a capacity of 450 MW. The blocks will have manuverable characteristics and will work in the sub-summit portion of the load diagram, which will favor the normal functioning of the electric power system. The first 450 MW block should, by the middle of the Tenth 5-Year-Plan, replace the two rundown and obsolete 150 MW blocks at the Purva Komsomolska thermoelectric power plant, and the second will increase the capacity of the Dimo Dichev thermoelectric power plant. The blocks with these characteristics of using low quality lignite are a novelty in worldwide practice and represent a substantial step forward in scientific-technical progress in the utilization of low quality fuel.

Further development of heating supply to the populace and to industry also will come about chiefly because of the use of local fuels and on the basis of the new technology for burning them, as principally new constructions of steam and water heating cauldrons with capacities of 100 to 220 tons of steam per hour and 65 to 100 Gcal/h are used. We foresee introducing new technologies for the utilization of fuel wastes from thermoelectric plants.

In the field of hydroelectric power, the design plan envisions the full operation of the Chaira pumping-storage hydroelectric plant, which is unique in the world in terms of its size and which will raise the efficiency and security of the electric power system through the presence of huge nuclear capacities in it. We foresee beginning construction of the Mesta and Sredna Vucha hydroelectric complexes. With the construction of the Sredna Vucha cascade the whole river bed will be utilized, and the Mesta cascade will bring the nation's water problems to resolution by transporting unused water to rayons which need it.

The design plan for supplying heat and central heating systems foresees significant development in the Ninth 5-Year-Plan. The share of the population which will be linked to the heat supply systems is planned to increase from 11.6 percent in 1985 to 17.2 percent in 1990, and the number of inhabitants with central heating in the country will increase from 1.4 million to 1.59 million, and the centrally heated residences, including public buildings, will increase from 480,000 to 761,000 apartments.

Centralized heating supply will receive its greatest development in Sofia. After the expansion of the Sofia thermoelectric power plant and the Traycho Kostov thermoelectric power plant, which will be put into operation in 1985 and 1986, we foresee expansion of the Zemlyane heating plant and the Lyulin heating plant, by 300-400 Gcal/h. each. By 1990 the degree of centralized heating supply in the capital will grow from 65 to 77 percent. As a result of this growth, about 950,000 people will obtain central heating (84.8 percent of the total number of the capital's inhabitants), thus we will practically overcome the existing disproportion between housing construction and supplying heat to it.

In the Ninth 5-Year-Plan we foresee completing the preparation for the construction of the first nuclear heating plant in our country, which after 1990 will cover the major part of the heating load in the city. New preconditions for saving huge quantities of liquid and gaseous fuels will be created, and these fuels will be passed along to other sectors of the national economy.

The plan foresees even greater development in the supply of heat to a number of other cities in the nation. Before 1990 we must complete construction of the thermoelectric plants for lignite coal in Stara Zagora, Pazardzhik, and Khaskovo, which at the first stage (up to 1990) will have an installed heating capacity of 70 Gcal/h each and 30 MW of electric capacity each. Local fuels will be utilized in the industrial heating plants in Kyustendil, Blagoevgrad, Kurdzhali, Nova Zagora, etc., which will be equipped with Bulgarian steam cauldrons of 100 t/h each and water heating cauldrons of 65 Gcal/h each. The existing Republika plant in Pernik and the Maritsa 3 in Dimitrovgrad will be expanded and modernized with the same type of water heating cauldrons.

The new tendency in heating supply systems is an application of long-distance heat supply after the reconstruction of condensing blocks for a central heating schedule for work. These reconstructions, as foreseen, will be carried out at the Varna, Bobov Dol, and Republika thermoelectric plants.

Speaking generally for the country, we foresee a qualitative change in the structure of the fuel balance, including the plants of the Energetika Corporation, in connection with centralized heating supply. The share of imported coal will decrease from 20 to 16.1 percent, of fuel oil and gas from 78.4 to 68.4 percent in 1990 and to 46.3 percent in 1995. Because of this, the use of local lignite coal will increase from 9.6 percent in 1989 to 12.4 in 1990, to 20.5 in 1995. By 1995 there is a prognosis for nuclear heat power sources to supply 17.1 percent of the general heating consumption. In this way, we expect that for Sofia alone the costs for fuel oil and natural gas in 2000 would be at a pre-1980 level, independent of the fact that 600,000 more people would have central heating.

The systems for transfer, transformation, and distribution of electric power will receive further development as the basic directions and tendencies are maintained under conditions of significantly increased quantity. This growth in network activity is determined by the necessity of transferring significant capacities over long distances as a result of the uneven distribution of production capacities and their great concentration up to 1990, by the necessity of the reserve of electric power supply to the consumers, by the higher requirements for quality in the supply of electric power for industry and domestic life. The network for ultra-high, high, and average voltage, as foreseen, will grow by about 5,000 kilometers alone in the course of the 5-Year-Plan, and the number of substations at 444, 220, and 110 kV will increase to over 80.

The plan for the Ninth 5-Year-Plan is also distinguished by qualitative directions in the development of networks. We will continue to affirm the accepted principle of direct transformation of electric power from 400 to 110 kV, which is linked to significant technical and economic advantages. The requirements for safety in drawing electric power from nuclear power plants will increase. We foresee significant growth in the system for offsetting reactive loads as a means for regulating the schedule for voltage in the power system. We have outlined a plan for increased construction of electric wires with two triads on each post, substations with simplified schemes, introducing new technologies for rapid and more efficient construction of networks.

The clearest example of technical progress in this period is the construction of the 750 kV intersystem link between the USSR, the Romanian People's Republic, and the Bulgarian People's Republic and the 750 kV substation in Bulgaria, which is now found in only a few countries in the world. The new intersystem link has a comprehensive purpose. It creates the possibility for a significant increase in the planned supply of power from the USSR, increased security in the parallel work on the unified systems of the European member nations of the CMEA, the possibility of realizing an additional effect from putting in load schedules and especially of preserving the system during emergencies in the powerful aggregates of the electric energy system.

According to the design plan, by the end of the 5-Year-Plan we foresee that each billion kilowatt hours of electric power produced will correspond to 220 km. of high tension electric wire (for the German Democratic Republic in 1980, this figure was 287 km.). We also plan on each 1,000 square kilometer of land in the country corresponding to 124 km. of high tension electric wire (for the GDR in 1980 this figure was 236 km.).

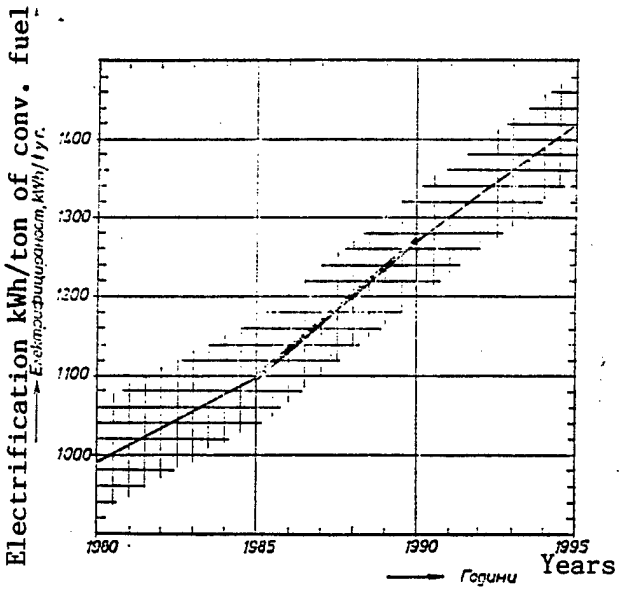
During the Ninth 5-Year-Plan we will continue, at high rates and at a qualitatively higher level, to implement systems for automated control of the constant production processes in the various fields. The implementation of comprehensive systems for automation, primarily on the basis of microprocessor technology, will cover open pit and underground mining of coal, production (nuclear, thermoelectric, and hydroelectric power plants), transfer and distribution of electric and thermal energy. We will finish, along the basic lines, the construction of the automated system for dispatcher control, which is unique for our nation and countries from the socialist camp; thus with contemporary hardware and software we will achieve optimal and reliable control of the power supply system.

The activity of automating the engineering labor will be directed toward fuller utilization of the possibliities for the existing computer technology, implementation of new program oriented microcomputer systems with broad utilization of the dialog system and machine graphics in resolving complex engineering and technical problems.

For the needs of economic control, we foresee beginning construction of a system for collecting, processing, and using information with a developed microcomputer terminal network and a hierarchical data base.

In order to increase the training of the operations staff at the thermoelectric and nuclear power plants, we will begin construction of training systems.

A characteristic for the energy balance in our country during the Ninth 5-Year-Plan is the further growth in its electrification, conditioned by the lack of high quality fuels for heating and technological processes. During the 1980-85 period, the electrification coefficient increased from 923 to 1,098 kWh per ton of conventional fuel. By 1990 we foresee a new increase in this coefficient, to 1,273 kWh per ton of conventional fuel (Figure 3). Similar indicators characterize power supply in other developed countries with comparatively limited local energy resources and a high relative share of electric production from nuclear power plants: France, 1050; Sweden, 1252; and Switzerland, 1080 kWh per ton of conventional fuel in 1981.

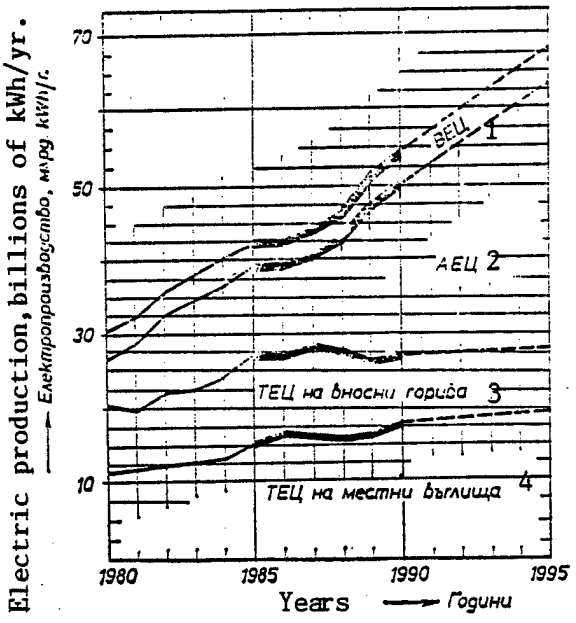


Фиг. 3. Електрифицираност на горивно-енергийния баланс в НРБ през следващите години

Fig. 3. Electrification of the fuel-energy balance in Bulgaria in the next few years

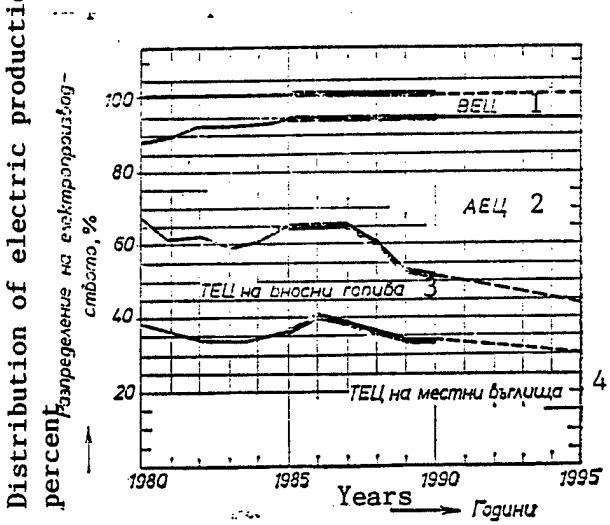
The basic quantities of electric power in the nation obtained are used by industry--over 50 percent--and in the domestic sector, from 30 to 35 percent. In the years of the Ninth 5-Year-Plan we expect further growth in electric consumption in the domestic sector, especially during the 1988-89 period, when we expect the introduction of new central heating capacities. Thus we expect the specific electric consumption of 5,240 kWh per inhabitant in 1984 to increase to 6,970 during 1990 (Figure 1). According to this indicator our nation will surpass many of the developed European countries.

The basic trend, outlined in the plan for development of power supply during the Ninth 5-Year-Plan, is a growing significance for our own energy and natural resource base (Figures 4 and 5). The share of electric power produced by local energy resources (coal, hydroelectric and nuclear energy) will increase from 75.2 percent in 1985 to 85.4 percent in 1990. The share of electric energy produced by the thermoelectric power plants with imported fuel will decrease from 24.8 percent in 1985 to 14.6 percent in 1990. The increase in electric energy produced by thermoelectric plants running on local fuels will be on the order of 2 billion kWh. We will secure the introduction of 3,525 MW of new electric production capacities, including 2,000 MW from the nuclear power plants, 630 MW from the thermoelectric power plants, of which 450 MW will be from local fuels, and 895 MW from hydroelectric power plants and pumped-storage hydroelectric power plants.



Фиг. 4. Електропроизводство на централите от корпорация „Енергетика"

Fig. 4. Electric production of plants of the Energetika Corp.



Фиг. 5. Структура на електропроизводството на корпорация „Енергетика"

Fig. 5. Structure of electric production of the Energetika Corp.

1. Hydroelectric plants. 2. Nuclear power plants. 3. Thermoelectric plants with imported fuel. 4. Thermoelectric plants with local coal.

In the last years of the Ninth 5-Year-Plan these will significantly improve the conditions for normal power supply. The period from 1986 through 1987 will be an exception, when we expect a shortfall in the peak capacity, as will the years up to 1990, which will be in a state of insufficient emergency and frequency reserve.

A particularly important direction in the energy supply policies for the nation in the future is increasing the efficiency and economical utilization of energy resources, not only in power supply, but in all branches of the national economy, the development of non-energy consuming productions, decreasing the losses of electric and thermal power. This activity will continue to be developed on the basis of coordinated efforts on the part of all administrations and organizations in the country, of the whole society.

The fulfillment of the tasks outlined in the Ninth 5-Year-Plan requires the resolution of several general questions:

1) A decisive and qualitative change in the approach to the design and construction of specialized organizations, which are goal-oriented in constructing power supply sites, supplied with modern, mechanized means for more precise construction, developing a corresponding infrastructure, which requires ensuring a significant decrease in the construction deadlines and increasing its quality.

2) In order to ensure having the cadres for power supply engineering, it is necessary first of all to create the economic and social preconditions for selecting and stabilizing the trained workforce and well trained specialists. It is necessary to perfect the material stimuli in the branches of power supply and to improve the social conditions most of all in the major energy centers.

3) Constantly growing international prices for furnishing energy require us rapidly and decisively to increase the share of local equipment at economically acceptable prices.

All the new large power sites, which will be constructed during the Ninth 5-Year-Plan and up to 1995-2000, will represent new heights in scientific-technical progress not only on scales that fit our country. Bulgarian power supply in the future will continue to develop in correspondence with the most progressive trends in world power supply, based on the leading achievements of our own, worldwide, and most of all Soviet science and technology.

12334
CSO: 5100/3027

ASSEMBLY WORK ON 1000 MW REACTOR BEGINS

Sofia TEKHNICHESKO DELO in Bulgarian 20 Apr 85 p 2

[Article by Tsvetana Evgenieva: "The 1,000 MW Reactor Is Being Installed"]

[Text] The date 11 April 1985 will remain memorable in the history of Bulgarian nuclear power engineering. On this date, at the site of the fifth power unit of the Kozloduy nuclear power plant, installation began on the first 1,000 MW reactor outside the Soviet Union. The reactor was built at the Izhorsk Plant in Leningrad.

The reactor's body, which weighs 320 tons, was lifted to the 20.20 meter level with the aid of the Demag crane and put in its appropriate place in the shaft. The preliminary preparatory work and the installation of the reactor and the main circulatory body were assigned to the well known power engineers from the brigade of Gospodin Yordanov, twice hero of socialist labor. This is the fifth reactor that has been assembled and installed by this brigade during its 14 years of work at the nuclear power plant. All of this is being carried under the immediate supervision and with the help of Soviet specialists.

"This is a very responsible operation which opens up a front for our responsible work in the future," said engineer P'otr Danilenko, leader of the Soviet fitters at the reactor section. "Everything here is unique."

We are not familiar in practice with the construction methods or the installation. The latest technical innovations in the area of construction are being implemented here. The following will be used: the mighty Demag universal crane; highly productive mechanization; large metal constructions; and factory-finished block frames for mass installation.

The reactor itself is different from its 440 MW "brothers". It is the latest generator of the VVER type. It has three times more heating capacity, a specific water-chemical schedule, an improved control system, and great reliability.

After starting the fifth power unit in operation in 1986, almost one-half of the power generated in Bulgaria will come from nuclear power.

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CSO: 5100/3027

SPECIAL METALLURGICAL MATERIALS FOR ELECTRONICS VIEWED

Prague PLANOVE HOSPODARSTVI in Czech No 1, 1985 pp 49-55

[Text] The demands for a sharp rise in the present qualitative parameters of Czechoslovak electronic and microelectronic products and to make them more competitive in foreign markets are compelling a fundamental improvement in the quality of subcontractors' products, some of the most important and critical of which are metallurgical materials made from special alloys. Their present and anticipated quality are determined primarily by the level of manufacturing technology and equipment. Among the most immediate tasks is that of increasing active participation in the provision of special metallurgical products to other CEMA countries. Continued progress in introducing electronics into our national economy also depends on laying the groundwork for a significant reduction in material expenditures on electronic components in combination with a concurrent lowering of dependence upon imports from nonsocialist states.

Electronics and microelectronics are among the fastest growing manufacturing sectors of electrotechnical production in the national economy. Their development must be even more markedly hastened in the coming years. Therefore, during the Eighth 5-year Plan, certain structural changes will occur in our national economy, which will mean preferential treatment for these sectors and a sharp rise in the qualitative parameters of produces which make up the electronic component base and advanced microelectronic elements. At the same time an annual rise in production of at least 14-16 percent will be ensured, as set by the 10th Plenum of the CCP CC devoted to the metallurgical-engineering complex.

Exacting tasks for fulfilling these plans are also set for the metallurgical industry, specifically in the building up of the material base for the manufacture of special metallurgical materials from nickel and its alloys, strips from nonmagnetic austenitic nickel-chrome steels, semifinished products from nonoxygenic copper, ferrite cores for defelction coils, high-temperature melting metals, aluminum foils, zinc powder, new contact coating materials; and strips from various special steels for a perforated mask, the frame of the mask, and magnetic shielding for a color television tube. In addition to these key materials, attention must be paid to other items (for instance, nickel-chrome and constantan wires, aluminum wires with copper cores, semifinished precision and moulded products made of various

types of brass and bronze, fine thin-walled nickel tubes, foils made from various alloys, etc.) because special metallurgical materials definitely determine the parameters of the final products of Czechoslovak electronics and microelectronics.

The provision of necessary metallic materials is mandated in a series of government resolutions calling for the development of a modern production base and the elimination, with certain exceptions, of dependence for these critical special materials on imports from nonsocialist states.

A study has been done on meeting the existing and anticipated demands of the electrotechnical industry, including the manufacture of color television tubes, which calls for the provision of the majority of individual items during the Eighth 5-year Plan. This requires, however, not only prudent investment in equipment by manufacturing enterprises and their development facilities, but also by research institute pilot plants within the Non-Ferrous VHJ [economic production unit] and the Iron Metallurgy VHJ. These critical semifinished metallurgical products will, to a greater extent, require mutual exchanges (division of labor) with certain CEMA member countries, especially bilateral collaboration and cooperation with the GDR, HPR and USSR.

The Metallurgical Production of Special Materials

The existing and anticipated demands of electronics and microelectronics for all starting materials are very critical because they condition the attainment of the required technical parameters, including increased reliability, service life, shock resistance, response, resolution, etc., in addition, moreover, to concurrent miniaturization. Electronic parts in applicance must work reliably under even extreme functioning and meteorological conditions. This means projecting constantly growing expenditures for special metallurgical materials. The electrotechnical industry, on the basis of the current state of the art and in accordance with predictions, has determined the necessary set of sizes, shapes, and qualities for current and future special metallurgical materials needed throughout the national economy. Since the problems associated with current and future special metallurgical materials for electronics and microelectronics are so far-reaching (each encompasses one hundred items), they can be simplified only with special semifinished metallurgical products, especially those made of nickel and its alloys, which are produced at the special works at n.p. [national enterprise] Non-Ferrous Rokycany.

Extraordinary demands are being placed on these semifinished metallurgical products as regards precisely defined mechanical, physical, structural, dimensional and surface qualities, in addition to perfect homogeneity. The bulk of them are produced by rolling and drawing, which differ significantly from ordinary metallurgical production in the following aspects:

With respect to technical requirements, their labor intensiveness is substantially increased (this has a negative effect on the capacity of production equipment and on labor costs);

generally limited-volume products are involved, and their production often requires special single-purpose machinery;

frequent modification of required materials and parameters;

problems with access to certain raw materials;

a wide range of dimensions coupled with stringent requirements on their application;

high investment expenditures for equipment, which is for the most part imported from nonsocialist states (or provided through mutual cooperation with foreign suppliers).

Meeting the Critical Demands of Electronics in Special Metallurgy

N.p. Non-Ferrous Rokycany is the CSSR's sole producer of special metallurgical materials of a predominantly nickel base, some of which are intended for the critical objectives of electronics and microelectronics. Therefore, a series of modernization efforts has been carried out at this enterprise in recent years in order to upgrade the standard of metallurgical production. The most important of these is the construction of a new rolling mill, with the following key production facilities:

a rolling line for rolling hot castings weighing up to 500 kg.

a milling line for the double-sided milling of rolled products;

an annealing section for bright annealing in a hydrogen or, if need be, nitrogen atmosphere, at temperatures of 800-1000°C;

a cold-rolling line with a 500 mm four-high rolling mill for rolling up to a thickness of 0.4 mm;

a 20-roller mill stand for cold rolling strips at a thickness of .05-1.2 mm with a maximum width of 300 mm.

At this production installation it is possible to manufacture semifinished metallurgical products to standard specifications which are competitive with other advanced metallurgical products in the world. The expanding rolling mill will be completed in the second phase in order to meet even the most rigid demands of electronics and microelectronics. This will pave the way for production of semifinished products which will be qualitatively competitive with the best in the world. The completion of the rolling mill depends foremost on the delivery of specialized machinery and equipment to meet the continually rising quality demands of Czechoslovak electronics for fine metallurgical products which satisfy critical requirements of exact chemical composition, minimum size tolerances, high quality finish, necessary physical and mechanical characteristics, etc.

The equipment is for the surface finishing of cold rolled polished strips, the continuous annealing of strips in a constant hydrogen atmosphere, flaw

detection control of strips and indication of defects, slitting of strips and protection of rolls during shipping with paper or plastic.

Currently, the most critical tasks for speeding the supply of special metallurgical materials for electronics and microelectronics involve:

strips and wires made from alloys of the nickel-iron-cobalt variety for sealing to hard glass or ceramics.

finished alloys of nonoxygenic copper for further pressure treatment;

strips of nonmagnetic austenitic nickel-chrome steel (supplied in cooperation with n.p. SONP [United Steel Works, National Enterprise] Kladno).

The provision of all of these special metallurgical materials is incorporated into the investment act "Construction of the Nickel Alloy Rolling Mill--Phase II," and it is also mandated in Czechoslovak Government Resolution No 319/82. The implementation of the act was scheduled in the plan for 1984 as an obligatory target of the state plan with a 1986 deadline for fulfillment.

By constructing the material bases for satisfying even the most stringent requirements of electronics not only will the basic groundwork for limiting imports be laid, but possibilities will be created for exporting these special metallurgical products to countries of the CEMA. Thus, for instance, n.p. Non-Ferrous Rokycany will not only meet the Czechoslovak demand for nonmagnetic austenitic nickel-chrome steel strips for use in the production of color television tubes according to the strenuous conditions of the lincensor (fy Toshiba, Japan), but it will also undertake to deliver these critical steel strips to the GDR on the basis of a signed inter-governmental agreement.

Other production is closely connected with that of extremely critical special metallurgical materials for electronics and microelectronics: the production of metallurgical nickel-base products for the needs of electrical engineering, goods manufactured from magnetically mild alloys, cathode and structural nickels, alloys for sealing to soft glasses, electroplating materials, magnetically mild hard alloys, materials for heat resistors, copper and nickel alloys, etc.

International Cooperation

Because of advanced technology and production requirements and limited investment capability, we are able to supply a wide range of special semi-finished metallurgical products for electronics and microelectronics only by cooperating closely with CEMA member states. Therefore, we are striving for a higher level of integration with innovative programs of the other socialist states in order to achieve, by mutual cooperation:

the construction of a strong production base and concurrent improvement in the economy of production of special limited-volume materials;

closer cooperation in the division of production between individual CEMA states;

investment savings, especially in the area of equipment imports from nonsocialist states;

improved efficiency in solving scientific and technical problems;

limiting the dependence of Czechoslovak electronic manufacturing on metallurgical products from nonsocialist states by mutual exchanges of special metallurgical products between CEMA countries.

At present, the demands of customers in CEMA countries for Czech semifinished metallurgical products from special alloys are being met to only a limited degree. In other areas of metallurgical production of non-ferrous metals, there is a generally satisfactory level of cooperation. Our foremost aims are bilateral collaboration in the area of specialization and cooperation, effective exploitation of unused capacity, and exchanges of metallurgical products. These will facilitate the reduction of imports from nonsocialist states and of capital construction. Specialization in manufacture of new types of products, the recycling of non-ferrous metal wastes, the rational use of fuel and energy, etc. are likewise connected with such cooperation.

The most important area of collaboration in supplying current and projected electronic programs exists with the GDR, in particular in the production of special alloyed foils of gold and antimony, gold microconductors, ferrite cores for deflection coils in color television tubes, refractory bimetallic strip, strips of nonmagnetic austenitic steels, steel strips for color television tubes, etc.

For the time being the possibilities are limited for further upgrading the active participation of the Czechoslovak side in the production of special metallurgical materials from nonferrous metals for other CEMA states. Our future cooperation is conditioned by capacity expansion, expecially in the area of nickel-base alloys, refractory metals, zinc powder, certain products of powder metallurgy, etc. Exports resulting from expanded capacity would have to compensate for the costs of imported components needed by the CSSR.

For further improvement of multilateral and bilateral international cooperation in meeting the demands for metal products, it is necessary to develop a uniform, unified electronics component base. This, however, principally requires extremely effective coordination of technical development and licensing relations between CEMA member states.

Intensified specialization and cooperation with CEMA countries in the manufacture of electronic and microelectronic elements will help in limiting of special alloyed materials, or components made from them, from nonsocialist states.

Designing Experimental Development Processes

Improving the technological level of engineering devices and their competitiveness in international markets is the condition for developing electronics, and in particular microelectronics, as well as regulation and control equipment, computer technology investment and consumer electronics, and future products of the electrotechnical industry.

The total demands for special metallurgical materials conditioning the further development of the above sectors were included in the state project of technological development, "Materials for Electronics," which was coordinated by Tesla VUST [Tesla Research Institute for Communications Technology], Prague. The project is composed of two sub-projects: "Strips for Supply Leads for Integrated Circuits" from the alloys CuFe2 and FeNi42, the supplier of which is n.p. Non-Ferrous Rokycany; the development of materials from special magnetic steels with high nickel and chrome contents is contained in the sub-project for technological development "Materials for Color Tubes."

The objective of these development plans is to master the technology of producing new materials and achieve a product quality in line with specific requirements for shape technology, surface finish, heat treatment, etc.

Second-stage construction of the n.p. Non-Ferrous Rokycany special metallurgical works rolling mill will lay the production groundwork for effecting both projects of technological development--for the manufacture of strips from the alloys CuFe2 and FeNi42, and of nonmagnetic austenitic nickel-chrome steels for color television tubes. The realization of both projects of technological development will ensure:

substantial reduction in raw material expenditures and thus in the prices of strips made from equivalent alloys;

substitution for imports from nonsocialist countries (reduction of dependence on imports);

partial replacement of metals in short supply (especially cobalt and nickel) with more accessible materials.

Given the task of supplying new special metallurgical materials and growing customer demands, the manufacturing enterprise n.p. Non-Ferrous Rokycany has from the outset been cooperating successfully (since the late 1940's as a result of the embargo on the importation of these critical materials) with the sector Metals Research Institute in Panenske Brezany. This research institute is working not only on the development of new alloys, but also on the development of production technology and equipment, along with the simultaneous reduction of specific consumption of materials in short supply, fuel and energy, the improvement of efficiency, etc.

In recent years, in connection with furnishing strips made from special nonmagnetic austenitic steels for the manufacture of color television

tubes under license, close cooperation has been established between workers at the n.p. Non-Ferrous Rokycany special metallurgical works and workers at VUHZ [Institute for Research in Ferrous Pretallurgy] Karlstejn, and it will be further expanded in the near future.

Relatively ambitious targets for the concerned enterprises and research institutes for supplying more new materials for the development of electronics have been set by Resolution No. 6/83 of the CSSR Government Presidium. These involve new products and primarily non-ferrous-base metal alloys; strips with critical quality demands made from complex compound alloys of nickel, copper, and iron bases; and also strips cald with precious as well as non-ferrous metals.

Current Goals of the Special Metallurgical Works

1. The rapidly developing electronics industry and completion of innovative programs are requiring changes in the metallurgical works' materials and non-ferrous metal products, and a reduction in their specific costs. This will pave the way not only for further development in the manufacture of components for introducing electronics into the national economy, but also for a reduction in the dependence of electrotechnical manufacturing on the importation of materials and raw materials from nonsocialist states.

Today, in the production of integrated circuits abroad, for instance, the solid phases are formed on substrates made of new, more economical materials than a nickel-iron-cobalt alloy. The most common of these is CuFe2. A rolled strip of this substitute material, machined for specific technical conditions, completely replaces previously used nickel-iron-cobalt substrate significantly economizes on hard-to-find cobalt and nickel, and imports higher thermal conductivity to the material. Another promising substitute material is strip made from the alloy FeNi42.

Both substitutes have already been tested with positive results; this means that they can be used in current production.

Customers are most interested in the prices of strip made from these substitute alloys, though, and the prices for strip made from the alloy FeNi42 are only 63 percent of those of nickel-iron-cobalt strip; prices of CuFe2 strip are only 17 percent. This allows a significant reduction in specific expenditures in the manufacture of electronic components.

2. To ensure higher quality parameters for solid-state integrated circuits along with a reduction in production costs at k.p. [cooperative enterprise] Tesla Roznov, n.p. Non-Ferrous Rokycany will guarantee in its metallurgical products:

a. a significant improvement in surface quality and in uniformity of physio-mechanical characteristics of alloyed metal strip intended for substrates, and a concurrent upgrading of longitudinal transverse strip smoothness. This will ensure more even surface corrosion during electroplating and improve the reliability of soldering-on of a silicon system, including perfect contact of leads.

Improvement in the quality of surface parameters of initial metallic strips can be obtained by double-sided grinding and polishing, as is currently being done by leading world producers.

b. Substantial increase in the length of strip metal (at least double) while guaranteeing optimal hardness. This has a positive effect not only on economic indicators from the standpoint of better utilization of raw materials, but also because of the possibility of using hard metallic high-speed stamping tools.

The above requirements can be met at the production site of initial strip metal only through the fundamental changes offered by existing technological advancement. This requires in particular:

introducing the welding of strips of thicknesses from 1.8-2.5 mm from the same melt, with subsequent rolling final size;

guaranteeing the final heat treatment of strips in a continuous furnace with a constant hydrogen atmosphere at a temperature of up to 1000° C.

c. For the introduction of continuous production of integrated circuits made of strip metal on automatic lines, it is necessary to reduce the thickness of strips from approximately .4 to .28 mm, .25 mm, and .21 mm; simultaneously to increase the dimensional precision of both the width and thickness of strips; to maintain uniformity of mechanical and physical qualities within very narrow tolerances, as well as high surface quality (grinding and polishing to remove the undesirable martensitic layer), as a result of which the conditions for soldering are improved and the need to treat the surface with electroplated coatings is reduced.

Because of the current modernization of the new rolling mill in stage two and the full installation of modern production equipment, the way is being paved for meeting critical demands for special metallic materials faster. The improved quality of semifinished metallurgical products enhances their utilization by customers by up to 30 percent.

3. The increased value of material and energy input into the production process will be guaranteed by various rationalization measures as material and energy requirements are reduced. This mainly involves reducing previously high specific demands for basic raw materials for the manufacture of semi-finished metallurgical products (reduction of initial weight), in particular by ensuring the optimal shape and mass of material delivered to the rolling mill.

Further individual measures associates with optimizing progress in production technology will be aimed at reducing waste, limiting melt loss, reducing unsubstitutable losses, etc.

4. The development of electronics is resulting in a significant instability of the requirements for generation and manufacture of special semifinished metallurgical products. Moreover, to a significant degree, small-tonnage,

economically critical production with formidable requirements with regard to the physio-chemical qualities are involved. The realization of the above plans is impossible without the close cooperation of n.p. Non-Ferrous Rokycany Special Metallurgical Works, and workers from the sector Metal Research Institute at Panenske Brezany and the Iron Metallurgy Research Institute in Karlstejn.

The bases developed for expansion and increased quality in the manufacture of semifinished metallurgical, in particular nickel-base, products for the development of electronics and microelectronics in the Eighth and Ninth 5-Year Plans take into account the future directions and goals of these modern and progressive sectors and their projected:

targets for technological and scientific development,

measures to intensify international division of labor among CEMA countries,

investment plans of the responsible production enterprises,

innovative programs for improving qualitative parameters and application characteristics of products,

plans for comprehensive reorganization,

targets for reducing the dependence of electrotechnical production on imports from nonsocialist countries.

The most important precondition for the fulfillment of these requirements is the timely execution of the second-stage construction of the nickel alloys rolling mill, which is being ensured by the modernization of the n.p. Non-Ferrous Rokycany Special Metallurgical Works. This will also create preconditions with respect to import substitution from nonsocialist states and potentials for exporting these metallurgical materials to CEMA countries; and it is in line with the current integration of this largely limited volume, technologically critical production, which also guarantees reimbursement for importation of types of special materials in short supply for the development of electronics in the CSSR.

12290
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TURNOVER STRUCTURE OF CAPITAL ASSETS DISCUSSED

Prague PLANOVE HOSPODARSTVI in Czech No 1, 1985 pp 77-79

[Text] The efficiency of manipulating capital production assets is affected by their productive life, i.e., their turnover. Rapid turnover of capital production assets and its influence on the intensification of productive life involves first of all the active component (machinery and equipment) of the technological structure. These intrinsically do most to contribute to the result of net national productive life and they have a shorter turnover period than the plant component. Thus they transfer their value to that of their manufactured products more consistently.

Growth in the allotment for machinery in total capital assets indicates a positive trend for intensification of productive life, which can best be increased by rapid addition of machinery and equipment through investment. On the other hand, it should be considered to what degree this positive trend may be hampered (or caused) by limiting the modernization of machinery and prolonging turnover, and the consequent negative phenomena which work to reduce implementation of technological development.

We will attempt to prove the following hypothesis about the interdependence of turnover and fluctuation in the progressive structure of capital assets: it is possible to achieve improved technological structure of capital production assets, and consequently their active component (machinery and equipment), with a growth in the period of asset turnover. The longer production machinery is in operation and, as a result, the longer its turnover period, the greater the growth in its proportion to total capital assets. Thus, if there exists a significant interdependence (relationship) between the evolution of these two indicators, the turnover influences the proportion of capital assets in machinery according to its tendency, or the proportion of capital assets in machinery influences turnover.

Such an interdependence must not simply be judged formally (statistically) but, rather, primarily as regards its economic sense as a logically possible causal relationship.

Let us attempt to show the validity of the above hypothesis using the evolution of the said quantities in post-war Czechoslovakia. In general,

all of the influences which are at work on turnover and the technological structure of capital assets (notably, for instance, investment in additional machinery) enter upon the relationship being investigated in its actual evolution. The discovered dependence, which is to be demonstrated, also asserts itself in the existence of these influences.

As an indicator, turnover is ascertainable by common statistical charting. In order to prove our hypothesis we will employ, however, a calculation of the average turnover of capital assets in machinery during the 5-year periods of post-war development, as it was calculated by Z. Srein and P. Schut by employing a newly construed indicator, which is found, together with our own calculation showing the average proportion of machinery to total capital production assets, on p. 78.

To see whether an interdependence exists between the average turnover and the average proportion of machinery to total capital assets we must test by using a paried correlative coefficient, such as Spearman's relationship of successive correlation.

Average Turnover and Average
Capital Investment in (Proportion of) Machinery
in the Period 1951-1980

Period	Average Turnover of Machinery Capital Assets (Years) in:			Average Proportion of Machinery to Total Capital Production Assets (%) in:		
	Industry	Agriculture	Construction	Industry	Agriculture	Construction
1951-1955	34.2	16.7	16.4	32.7	18.1	37.5
1956-1960	23.8	12.3	13.5	35.8	21.1	41.0
1961-1965	22.0	9.7	15.7	38.5	22.9	45.4
1966-1970	24.0	12.1	15.8	40.3	23.1	48.8
1971-1975	24.6	13.1	16.1	43.1	24.3	50.8
1976-1980	26.4	13.2	16.0	45.8	25.9	54.2

Sources: Average turnover from Z. Srein and P. Shut, "Vyvoj obnovy strojnich zakladnick prostredku v CSSR" /Trends in Modernication of Machinery Capital Means in CSSR/, PLANOVE HOSPODARSTVI, No 7, 1978, p.53; the data for the period 1976-1980 is from our calculations using the method of the above article. Average capital investment in (proportion of) machinery is our calculation based on "Statisticke rocenky" /Statistical Annuals/.

Interdependence of the Average Turnover of Capital
Production Assets in Machinery and Average Proportion
of Machinery to Total Capital Production Assets

In the period	Correlative Coefficient of Paired Factors in:		
	Industry	Agriculture	Construction
Including First 5-year Plan (1951-1980)	-0.1	-0.2	-0.1
Discluding First 5-year Plan (1956-1980)	0.9	0.7	0.9

The correlative coefficient signals a significant interdependence between the average turnover of capital production assets in machinery and the average proportion of machinery to total capital production assets only in the isolated case of the first half of the 1950's. The correlative coefficients in this period are totally insignificant and either do not signal interdependence or are overshadowed by other, stronger relationships. This discovery is partially an affirmation of a certain peculiarity of the first five-year plan, which is discussed in the article cited above with an interpretation of the calculation of the average turnover, and partially a confirmation of the stated hypothesis. A significant interdependence exists among the factors being researched both in industry and construction, and at times, more weakly, in agriculture.

We cannot, in our opinion, ignore distinct periods in viewing repeated, relatively stable, essential and significant relationships between factors. Genuinely "stormy" changes at the outset of socialist industrialization may be more profitable for the study of causal relationships--in our case, between turnover in capital production assets in machinery and their proportion to total capital production assets.

In the First 5-year Plan impressive growth in the volume of capital assets, substantial and drastic structural changes, and widespread investment activity led to a growth in capital in (the proportion of) machinery and concurrently to a long turnover period, after which, in the "more peaceful" period 1956-1980, when more gradual and less drastic changes in the structure of capital production assets occurred, a tendency appeared toward mutual conditioning between capital investment in (the proportion of) machinery and average turnover. Thus the stated hypothesis was confirmed.

It must be kept in mind that we are discussing a negative phenomenom in the productive life of capital assets. Progressive growth tendencies in their active component were, that is, encouraged by insufficiently fast liquidation of machinery and prolongation of its production life, which was de facto in contradiction to the desired tendency toward shortening the turnover period.

On the other hand, we must allow that the interdependence in question has a reverse effect, and thus the growing capital investment in (proportion of) machinery lengthens its turnover time. Such an effect, even if it is economically less logical, can be caused, for instance, by a structural change within the active component of the technological structure of capital production assets favoring machinery which prolongs turnover, has a longer service life, and remains in production longer. Nor is this essential feature of the relationship in question beneficial for the productive life of capital production assets.

The effect of lengthening turnover on the growing proportion of machinery is economically more logical. Thus the stated hypothesis. If we further assume that it is possible to express this dependence as a linear relationship represented by coordinates, then it can be quantified, for instance, with a regressive coefficient which expresses change in the dependent variable

(proportion of machinery to total capital production assets) in relation to a changing individual independent variable (turnover period of capital production assets in machinery). Consequently we may now quantize it, if we assume that the relationship

$$p = f(T),$$

in which p is the proportion of machinery to total capital assets and T is the turnover period of machinery, holds in the formula

$$p = a + b\,T,$$

in which a is the parameter and b the regressive coefficient.

We may calculate the necessary regressive coefficient from the supplied correlative coefficients. It was calculated at the level of 2.2% per year in industry during the period of strong dependence: 1956-1980; in agriculture, .9% per year in construction, 4.2% per year.

Consequently in industrial conditions in the years 1956-1980 it held, on the average, that a change in the turnover of capital production assets for one year evoked a change (growth) of 2.2% in the proportion of machinery to industry's capital production assets. During the same period the turnover of industry's capital production assets was prolonged by 2.6 years, to which then corresponds an increase of 5.7% in the proportion of machinery to total capital production assets (caused by the negative influence of prolonged turnover). In reality, however, the proportion of machinery to industrial capital assets rose by 10%. This growth was achieved by prolonging turnover by a factor of more than one-half, and only to a lesser degree by other influences, which are brought to bear by active investment in capital production assets.

The influence of prolonged turnover on the proportion of machinery represented a change of 85% in construction, but of only 17% in agriculture. Thus the actual growth of progressive technological structure (seen in the growing proportion of machinery) in construction and the more than 50% figure in industry is more or less fictitious: it is a result of the prolonged production life of machines. Further, only a minor part of its growth was caused by the influence of technological development. This small influence is a result of the ultimately insufficient room made for its application in capital production assets by the volume of liquidation and the very structure of the investment process (the small allotment for modernization, renovation, and so forth).

The growth in the proportion of machinery in past development was to a significant degree caused by prolonging turnover. With this in mind it is also necessary to consider the progressive tendency of growth in capital investment in (the proportion of) machinery in the evolving technological structure of capital production assets. Therefore, the way to more consistent consideration of technological development in this area involves shortening turnover.

12290
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NONRUBLE EXPORTS OF HUNGARIAN INDUSTRY ANALYZED

Budapest KULGAZDASAG in Hungarian No 5, May 85 pp 3-17

[Article by Adam Torok, research fellow, World Economy Research Institute of the Hungarian Academy of Sciences: "Hungarian Industry's Nonruble-Denominated Net Export"]

[Text] The study employs representative sampling, enterprise-supplied data, and the author's own computations as the basis for analyzing Hungarian industry's direct contribution toward improving the nonruble balance of payments in 1979-1982, an especially difficult period from the viewpoint of Hungary's external economic equilibrium. It turns out that the net exporters during the investigated period were increasingly the material- and capital-intensive industries whose problems have been mounting worldwide. The bulk of the nonruble-denominated direct net export was supplied by a narrow circle of large enterprises that remained practically constant over time. The managing agencies were relatively indulgent toward these enterprises, on the principle that their viability in the short run, and hence the maintenance of their ability to export, was in the vital interest of the national economy. Over a longer period of time, however, there is the danger that an "independent" export sector may develop that would be exempt from the requirements of efficiency applicable to Hungarian industry as a whole.

The traditional approach to the export structure--i.e., the investigation of export in its breakdown by branches, industries or commodity divisions--refers also to the processes of income generation behind the changes in the export structure. But this cannot be assumed when the investigated country lets external economic forces assert themselves in the domestic economy only after they have been dampened considerably, or when the considerations of export efficiency are relegated to the background for various reasons (for example: foreign indebtedness, a strategy of autarchic economic development, or strict implementation of measures to ensure the supply of both raw materials and finished products in the domestic market). In such cases the possibility is not excluded at all that also export of low or even negative profitability may take

place, because export is rated and maintained primarily on the basis of how it fulfills its function of earning foreign exchange, rather than on the basis of its income-generating ability or efficiency. Due to various constraints, this was unquestionably the situation in the Hungarian economy at the beginning of the 1980's, and fulfillment of the function of earning foreign exchange has long been the primary requirement that our capitalist export must meet.

Capitalist net export[1] best reflects how the function of earning foreign exchange is being fulfilled. It is the difference between the export and the import of an industry or enterprise, and thus it is one of the indicators of the manifest comparative advantage. However, the exact meaning of net export or import must be clarified. We may distinguish between direct and overall net export or import. Overall net export or import (Eva Varhegyi employs overall net import in her 1984 study of how the operations of individual industries influence Hungary's balance of trade [Varhegyi, 1984]) includes the direct net export or import of a given industry or enterprise, and also the indirect net export or import that the industry or enterprise transacts through its products sold domestically, respectively through its domestically procured inputs. This could also be called the national-economic-balance approach, because it shows the effect that the production activity of the industry or enterprise has on the national economy's balance of foreign exchange. When research concentrates on enterprises, the drawbacks of this approach are twofold. First, the data necessary for the computations can be obtained only from the intersectoral balances (input-output tables) of the national economy; but these are fairly old and do not contain microeconomic data. Secondly, the research presents processes that are only partially perceptible to the enterprises; the indirect export or import is often so far removed that the given enterprise is not even aware of it.

Direct net export or import, on the other hand, includes only the direct trade transacted by the investigated industry or enterprise. Here we may speak of a foreign-trade-structure approach because the enterprise's decisions directly influence the net balance of trade, and hence the net export or import structure of the industry or national economy.

Dual Role of Capitalist Foreign Exchange

On the analogy of "limited-resources economy," it is perhaps permissible to call the Hungarian economy a "limited-import" economy. However, CEMA import is limited in physical terms, while capitalist import is limited for reasons of foreign exchange. The capitalist foreign exchange that can be earned through exports of goods and services, or acquired temporarily by borrowing, plays a dual role in the economy's development. It is simultaneously a limited resource (that can be converted into factors of production: capital, technology, perhaps skilled labor and other inputs), and--because it is a limited convertible resource--also a preferential objective of production and economic activity. In the first approximation, therefore, the desirable direction of the export structure's transformation would appear to be the development of the industries and enterprises that are capable of the largest possible capitalist net export, because this is where the function of earning foreign exchange asserts itself the best and where the greatest comparative advantages seemingly exist. It is indisputable that, in the case of limited-import

economies, an analysis of the export structure alone may not be adequate, and only a survey of the net export structure will round out the picture. An attempt at such a survey will be made below. But under no circumstances is the contention valid that industries or enterprises can be rated solely on the basis of the largest possible capitalist net export. Namely, a large capitalist net export requires also other inputs besides capitalist import, and usually capitalist export is not the only output. The other inputs cannot be increased beyond a certain limit, nor can the other outputs be reduced. This limit is marked, on the one hand, by increasing difficulties in socialist import or domestic procurement. And on the other hand, by such an increase of shortage phenomena in the domestic market that exceeds what the economic or political agency directing or supervising the enterprise is willing to tolerate, and which is hampering continuous production as well.

A correlation can nonetheless be found between capitalist net export and the economic positions of enterprises or industries, but this correlation is by no means a direct one, and in most cases not a positive one either. Its investigation offers an insight also into the causes underlying certain structural peculiarities of Hungary's capitalist net export, peculiarities that up to now have perhaps been less familiar or less emphasized.

Scope of Investigated Industries and Enterprises

The material on which the computations are based contains data only on Hungarian industry's export, and not on Hungary's entire commodity export.[2] Industrial products exported by exporters other than industrial enterprises (farms, and plants providing services, for example) account for the difference between the two types of export. In the export of industrial products to capitalist countries, however, this difference is insignificant. Industrial enterprises under the supervision of central agencies other than the Ministry of Industry are likewise excluded, which means that the food industry, a large part of the building materials and ceramics industry, a large part of the lumber industry, etc. have been omitted. Nor were we able to obtain data for all the enterprises under the supervision of the Ministry of Industry, but only the smaller enterprises among them have been left out. The investigated sample consisted of 135 industrial enterprises in 1979 and 1980, 158 in 1981, and 160 in 1982. This circle of enterprises supplied 93.7 percent (or 2028.7 million dollars) of the combined nonruble-denominated export of all the enterprises under the supervision of the Ministry of Industry in 1981, and 92.6 percent (or 1953.6 million dollars) in 1982. This export accounted for 47.3 percent of Hungary's total nonruble-denominated export in 1981, and for 46.4 percent in 1982; in other words, for more than 80 percent of Hungary's nonruble-denominated export of industrial goods (excluding the food industry's export).

On the basis of the presented proportions, the scope of the investigation seems broad enough. Therefore the conclusions may probably be regarded as valid for Hungary's entire nonruble-denominated export of industrial goods.

Economic Policy Environment and Net Export

During the four years under investigation, Hungary's industrial enterprises operated under increasingly more rigorous conditions because economic policy, respectively the system of regulation, strived to transmit to them more and

more fully the effects of the generally worsening external economic environment. Primarily the new price system, introduced at the beginning of 1980 to simulate competition in the world market, was intended to serve this purpose [Racz, 1980]. But it turned out that the negative effects of the new price system were rather strong and did not serve at all the economic-policy objective proclaimed as the fundamental objective: the improvement of external economic equilibrium. It became evident that the new price system gave most enterprises an incentive to reduce the volume of their capitalist export. The ability of many industrial enterprises to compete in capitalist markets was impaired considerably if these enterprises had to pay what were said to be world-market prices, for raw materials imported from socialist countries or procured at home, or for domestic metallurgical products. (For the effects of the new price system, see: Hoch, 1980; Deak, 1983; and Csikos-Nagy, 1982.)

In 1979-1982, furthermore, economic management strived continuously to limit more and more the enterprises' room for wage increases and investment, in order to restrict the outflow of purchasing power from the enterprises. These efforts were only partially successful. After practically every one of these four years, the reports on the fulfillment of the annual national economic plans told of wages rising in industry at rates faster than had been planned; and central curtailment of enterprise investments remained unsuccessful within the given framework, because it increased considerably the volume of unfinished investments [Belyacz, 1983, p 6].

Parallel with the central government's intention of restricting the outflow of purchasing power, an almost diametrically opposite effort asserted itself more and more during the investigated period. With wage preferences linked to the expansion of capitalist export, and with capitalist-export-expansion credits that amounted to between 6 and 7 percent of the annual volume of investment, this effort offered preferential treatment to enterprises that undertook to directly expand their capitalist export. At the same time, the number of exceptions to the new price system increased, again primarily when the enterprises pledged to expand their capitalist export, in exchange for special treatment. It is indisputable that economic management made capitalist export a preferential area because of the rapidly growing foreign indebtedness and debt-servicing problems. Yet, in many instances, the stronger incentive for the enterprises to expand their direct capitalist export was in conflict with the national economy's short-term objectives. With their applications for credit to expand capitalist export, for example, the enterprises often attempted to obtain money for development objectives which they otherwise would have been unable to realize [Torok, A., 1983]; and, instead of the expansion of capitalist export, they cited such objectives as the replacement of capitalist import with socialist import, import substitution, etc.[3] Because of the direct capitalist export incentive, supplier-user relations between Hungarian enterprises withered away in many instances, and the enterprises which would have processed the semifinished products exported to capitalist countries were themselves obliged to replace the exported semifinished products from capitalist import, often at prices higher than what the other enterprise was paid for the export.

Table 1 presents a summary of the processed sample, by industries. Wherever possible, industries that represent successive production stages are listed

one after the other. The "Other Industries" line is a catchall for leftovers; it lumps together the data of a few paper, furniture, printing-industry, ceramics, and office-supplies enterprises.

Table 1/a. Development of Nonruble-Denominated Direct Trade Within the Investigated Sample in 1979-1982 (in million dollars)

Industries	1979 I.	1979 II.	1979 III.	1980 I.	1980 II.	1980 III.
Textile	147,9	134,9	— 13,0	144,1	117,7	— 26,4
Clothing	21,0	44,4	+ 23,4	20,4	45,0	+ 24,6
Metallurgy	219,8	539,7	+319,9	247,6	550,7	+303,1
Of which: Aluminum	35,7	151,4	+115,7	46,7	195,5	+148,8
Metalworking	9,4	19,2	+ 9,8	9,0	20,5	+ 11,5
Engineering	428,5	640,6	+212,1	453,2	709,5	+256,3
Petroleum, gas	279,1	170,6	—108,5	118,5	225,6	+107,1
Electric power	12,5	1,3	— 11,2	18,3	6,0	— 12,3
Chemical	381,8	390,2	+ 8,4	470,4	456,5	— 13,9
Of which: Rubber	65,7	42,9	— 22,8	84,9	55,6	— 29,3
Tanning	97,2	13,8	— 83,4	65,2	9,3	— 55,9
Leatherworking	10,7	26,1	+ 15,4	13,5	28,2	+ 14,7
Shoe	14,8	24,7	+ 9,9	17,5	37,1	+ 19,6
Other	140,7	14,5	—126,2	172,8	15,2	—157,6
Jointly a)	1763,4	2020,0	+256,6	1750,5	2221,3	+470
b)	1697,7	1977,1	+279,4	1665,6	2165,7	+500

Industries	1981 I.	1981 II.	1981 III.	1982 I.	1982 II.	1982 III.
Textile	200,7	114,5	— 86,2	158,5	104,4	— 54,1
Clothing	25,3	61,6	+ 36,3	21,7	52,8	+ 31,1
Metallurgy	228,8	450,6	+221,8	173,5	395,5	+222,0
Of which: Aluminum	29,9	164,2	+134,2	20,8	120,7	+ 99,9
Metalworking	15,8	21,8	+ 6,0	16,0	18,6	+ 2,6
Engineering	454,6	679,0	+224,4	467,8	711,3	+243,5
Petroleum, gas	74,5	194,1	+119,6	78,3	191,9	+113,6
Electric power	9,3	10,4	+ 1,1	6,6	0,8	— 5,8
Chemical	491,0	460,2	— 30,8	480,5	444,6	— 35,9
Of which: Rubber	76,1	42,6	— 33,5	68,3	41,9	— 26,4
Tanning	55,4	9,0	— 46,4	39,5	8,4	— 31,1
Leatherworking	11,9	20,0	+ 8,1	12,0	17,7	+ 5,7
Shoe	22,0	30,9	+ 8,9	23,5	33,4	+ 9,9
Other	161,6	19,2	—142,4	184,9	16,1	—168,8
Jointly	1750,9	2071,3	+320,4	1682,8	1995,5	+312,7
	1674,8	2028,8	+353,9	1614,5	1953,6	+339,1

Key: I - Nonruble-denominatged direct import;
II - Nonruble-denominated direct export;
III - Net balance of nonruble-denominated direct trade;
a - Including the rubber industry;
b - Without the rubber industry.

Note: To make the annual data comparable, it was deemed necessary to show separately the data for the rubber industry. Namely, the large enterprise representing the rubber industry was granted in 1981 the right to conduct foreign trade independently. From then on it imported also many rubber-industry products not intended for productive consumption.

Source: Our own computations, based on statistics of the Ministry of Foreign Trade and the Central Statistical Office.

Table 1/b. Number of Enterprises in the Sample, by Industries

Industries	1979	1980	1981	1982
Textile	13	13	16	16
Clothing	8	8	12	12
Metallurgy	11	11	10	10
Of which: Aluminum	1	1	1	1
Metalworking	3	3	4	5
Engineering	50	50	61	61
Petroleum, gas	15	15	15	15
Electric power	1	1	1	1
Chemical	19	19	20	20
Of which: Rubber	1	1	1	1
Tanning	3	3	3	3
Leatherworking	3	3	3	3
Shoe	5	5	7	7
Other	4	4	6	7

The export and import data by industries are rather stable, especially from 1980 to 1982. This fact alone is an indication of the role that nonruble-denominated foreign trade plays in Hungarian industry's continuous operation. The curtailment of nonruble-denominated import from 1980 to 1982, by about 20 percent in dollar terms for the national economy as a whole, asserted itself much less in the investigated industries, barely exceeding 3 percent. But the combined nonruble-denominated export of the investigated enterprises, again in dollar terms, declined by 10 percent from 1980 to 1982. On the basis of the sample, then, it seems that Hungarian industry as a whole did not contribute directly in 1979-1982 toward the economic-policy objective of improving the balance of nonruble-denominated foreign trade. This, of course, was due to the worsening performance of individual industries. From 1980 to 1982, for example, the chemical industry's nonruble-denominated import increased by 2 percent, but its export dropped by 3 percent; the textile industry's nonruble-denominated import increased by 10 percent, while its export dropped by 12 percent; and in the shoe industry a 34-percent increase of nonruble-denominated import was accompanied by a 10-percent drop in export. Engineering's nonruble-denominated export stagnated, but its import increased by 3 percent. The 30-percent drop in metallurgy's nonruble-denominated import was matched by "merely" a 28-percent drop in its export. None of the investigated industries expanded its nonruble-denominated export from 1980 to 1982, while curtailing its nonruble-denominated import.

In each of the investigated four years, industry reported a net export in its nonruble-denominated foreign trade. This net export nearly doubled from 1979 to 1980, but dropped significantly in 1981 and continued to decline also in 1982.

Three industries (metallurgy, engineering, and--except in 1979--the petroelum and gas industry) supplied the bulk of industry's nonruble-denominated net export. But while the nonruble-denominated net export of engineering, respectively of the petroleum and gas industry, did not change significantly from 1980 to 1982, metallurgy's net export dropped sharply, and primarily this was also the cause of the decline in industry's nonruble-denominated net export. Whether computed with or without the rubber industry, the chemical industry's

net balance of nonruble-denominated trade worsened continuously, and by 1982 the chemical industry's earlier net export, which could be termed traditional, disappeared even when computed without the rubber industry.

While in the iron and steel industry the individual successive production stages (metallurgy, metalworking, and engineering) are net exporters also in their own right, the picture that the two sets of successive production stages within light industry present is far from uniform. The clothing industry, and the leatherworking and shoe industries are in themselves traditional net exporters in nonruble-denominated trade, and public opinion attributed to them earlier an almost distinguished role in Hungary's export of industrial goods to capitalist countries. (The effects of propaganda that emphasized the capitalist-export orientation of the programs for light industry's modernization probably contributed to this view.) But it is a known fact that Hungary is unable to obtain, from ruble-denominated trade or domestically, cotton, raw materials for industrial textiles, hides, etc. in sufficient volume and of suitable quality; therefore it must rely continuously on a substantial import of these raw materials from capitalist countries. This is reflected in the data showing significant capitalist net imports for the textile and the tanning industry respectively. However, we must also realize that a substantial proportion of these two industries' capitalist import undergoes one or two stages of further processing and is then shipped to the clothing, respectively the leatherworking and shoe industries, but there it appears as domestic input. Thus the supplied industries maintain their positions as net exporters to capitalist countries partially through the substantial capitalist net import requirement of the supplier industries.

In the case of the clothing and shoe industries, raw material from capitalist import is thus converted also into ruble-denominated export (it is a known fact that these two industries play a significant role in Hungary's industrial export to other CEMA countries and the Soviet Union in particular), but this remains partially concealed unless the input-output relations are taken into consideration. For the superficial viewer may easily gain the impression that the Hungarian textile industry is forced to rely on substantial capitalist import because of the domestic demand; and that the clothing industry, which is oriented on CEMA export, obtains most of its raw materials domestically. On the basis of the available computational material it is not possible to determine the extent of capitalist import's indirect conversion into CEMA export in the two sets of successive production stages within light industry, but this question definitely merits further investigation.[4]

The "Other Industries" line in the table shows a substantial and--for the investigated period as a whole--rising nonruble-denominated net import. Essentially this is a result of the paper and printing industries' substantial net importer positions.

The significant capitalist net exports of metallurgy, and of the petroleum and gas industry, were due in large part to the possibility of processing and exporting for dollars raw materials originating from CEMA import. Although the role of the two industries in earning foreign exchange is indisputable, the fact must not be overlooked that in recent years this form of CEMA import's conversion into capitalist import was a source of substantial enterprise

losses, already for two reasons. First, because Hungarian enterprises, under the new price system that became effective at the beginning of 1980, were able to obtain raw materials from CEMA import only at prices adjusted to the world-market prices--in other words, at higher prices--even when the actual import prices of these raw materials were lower than the world-market prices, and the state budget skimmed off the difference. Secondly, because the world-market prices of metallurgical and petroleum products declined after 1980. Thus, within the given structure, the significant capitalist net exports of metallurgy, and of the petroleum and gas industry, were gratifying from the viewpoint of the national economy's external equilibrium, but they burdened domestic equilibrium.[5] Due to the world market's price trends and the Hungarian price system's peculiarities, a capitalist net export in those manufacturing sectors whose material intensity is relatively low and technological intensity is high would have better enhanced the harmony of external and domestic equilibrium. Here it would not be worthwhile to dwell on the extent to which the well-known reasons of technology and competitiveness reduce from the outset the validity of this assumption. For in this case the net balances of nonruble-denominated foreign trade indicate comparative disadvantages that are again of structural origin.

In four subsectors (the pharmaceutical industry, the telecommunications and microelectronics industry, the production of medical instruments, and the production of highway vehicles), Hungarian industry's capital-labor ratio and traditions seemingly provide a good basis for capitalist net export that contains a substantial amount of domestic value added. But the pharmaceutical industry was a nonruble net importer in each of the four investigated years (with net balances of -12.2 million dollars in 1979, -33.4 million in 1980, -27.8 million in 1981, and -39.5 million in 1982). Behind this seemingly peculiar fact there is an enterprise and marketing structure similar to the one discussed in conjunction with light industry. Each of the pharmaceutical industry's three representative large enterprises is a significant nonruble net exporter, which is not surprising. But the separate enterprise that supplies the pharmaceutical industry with direct materials has an annual capitalist import exceeding 100 million dollars (naturally, this import supplies also the needs of production for CEMA export and for the domestic market), and thus in the final outcome the pharmaceutical industry's activity regularly shows a nonruble-denominated import surplus.

The telecommunications and microelectronics industry represents the technological forefront within CEMA, in the same way as the pharmaceutical industry. There were also central grants to aid the CEMA-oriented development of the electronics equipment and instrument industry during the past decade and a half. Capitalist export also increased somewhat, but it was possible to establish a base for the supply of components only from nonruble-denominated import that grew at a faster rate than capitalist export. The subsector showed a slight capitalist export surplus (10.5 million dollars) only in 1979, the first of the four years investigated. But a nonruble-denominated net import was reported for each of the three subsequent years (-10.7 million dollars in 1980, -10.8 million in 1981, and -8.2 million in 1982).

The production of medical instruments realized a fairly significant nonruble-denominated net export in each of the investigated four years (15.7 million

dollars in 1979, 23.0 million in 1980, 23.8 million in 1981, and 28.1 million in 1982). However, the provenances and destinations shade somewhat the picture that one may have formed of successful capitalist export performances. For example, developed capitalist countries supplied 96.9 percent (or 13.7 million dollars) of the subsector's nonruble-denominated import in 1982, but they purchased only 7.6 percent (3.2 million dollars) of the subsector's nonruble-denominated export. The rest of the export went mainly to countries that do not pay in convertible currencies (African countries, and China). Thus, in all likelihood, the subsector's trade denominated in convertible currency closes each year with a substantial import surplus.

The production of highway vehicles had nonruble-denominated exports of 39.6 million dollars in 1979, 28.6 million in 1980, 25.4 million in 1981, and 34.6 million in 1982. These data reflect the foreign-trade relations of the entire automotive industry's successive production stages, and they indicate a sustained good export performance by the subsector throughout the investigated period. However, the picture changes if we consider the data separately, by enterprises. It turns out that, within the successive production stages developed under the highway vehicle program, essentially the bus-assembling enterprise alone generated the nonruble-denominated net export. (This enterprise's nonruble-denominated net export was 39.5 million dollars in 1979, 52.2 million in 1980, 31.8 million in 1981, and 31.3 million in 1982.) Thus also in the automotive industry, similarly as in the pharmaceutical industry, the inputs obtained from capitalist import were built into the final product, the buses, mainly in the first stages of the production process, and the substantial net export reported by the final product's producer stems mostly from these inputs.

Structure of Export and Net Export

The bulk of Hungarian industry's capitalist net export is supplied by certain sectors, primarily by metallurgy, the petroleum and gas industry, and engineering. These sectors play a significant role in industry's overall nonruble-denominated export as well. On the other hand, there are several industries whose capitalist export is substantial, but their net export is insignificant or they are even net importers in nonruble-denominated trade. The textile industry and the chemical industry are such industries. Due to them, the structure of Hungarian industry's nonruble-denominated net export differs from the structure of industry's nonruble-denominated export that several researchers have already analyzed. The structure of net export differs from that of overall export also in its nature, because the main sectors can be "positive" as well as "negative," depending on whether a sector's net export or net import amounts to an outstanding proportion.

The two types of export structure show patterns that differ considerably. The main sectors in the export structure (metallurgy, engineering, and the petroleum and gas industry)[6] coincide by and large with the "positive" main sectors in the structure of net export. The only significant exception is the chemical industry whose share of net export declines as its share of export rises. But the "negative" main sectors in the structure of net export (the textile industry, the tanning industry, and the paper industry that accounts for the bulk of the net import of the industries in the "other" category) are industries that

depend on substantial imports of raw materials, and their primary role is to transform the raw materials imported from capitalist countries, into semifinished products or direct materials used in domestic manufacturing.

Table 2. Sectoral Structure of Hungarian Industry's Nonruble-Denominated Export and Net Export (percent)

Industries	1979		1980		1981		1982	
	Export	Net export	Export	Net export	Export	Net export	Export	Net export
Textile	6,8	— 0,5	5,4	— 5,3	5,6	— 24.4	5,3	— 16,0
Clothing	2,2	+ 3,4	2,1	+ 4,9	3,0	+ 10,3	2,7	+ 9,2
Metallurgy	27,3	+114.5	25,4	+ 60,6	22,2	+ 62.7	20,2	+ 65.6
Metalworking	1,0	+ 3,5	0,9	+ 2.3	1,1	+ 2.7	1,0	+ 0,8
Engineering	32,4	+ 75,9	32,8	+ 51,2	33.5	+ 63.4	36,4	+ 71,8
Petroleum, gas	3,6	— 38,8	10,4	+ 21,4	9,6	+ 33,8	9,8	+ 33.5
Chemical*	17,6	+ 11.2	18,5	+ 3,1	20,6	+ 0,8	20,6	— 2,8
Tanning	0,7	— 29,8	0,4	— 11,2	0,4	— 13.1	0,4	— 15.1
Leatherworking	1,3	+ 5,5	1,3	+ 2,9	1,0	+ 2,3	0,9	+ 1,7
Shoe	1,2	+ 3,5	1,7	+ 3,9	1,1	+ 2.5	1,7	+ 2.9
Other	0,9	— 47,4	1,1	— 33,8	1,9	— 40,0	1,9	— 51.6
Jointly	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

*Without the rubber industry.
Source: Table 1.

It will be worthwhile to dwell briefly on the net export columns of Table 2, and to toy with the idea of how Hungarian industry's capitalist net export could be supplied by the smallest possible number of sectors, under otherwise identical conditions.[7] In this way it is possible to pinpoint the sectors that are of "strategic importance" from the viewpoint of Hungarian industry's nonruble-denominated net export, the sectors without which Hungarian industry would be unable to be a net exporter even on the present scale in its nonruble-denominated foreign trade.

The fewest possible positive proportions in the net export columns have to add up to 100, which is the overall nonruble-denominated net export of the investigated industrial sample. In 1979, metallurgy alone had a larger nonruble-denominated net export than entire industry; otherwise only the combined net export of engineering, the chemical industry, the clothing industry, and the leatherworking industry equaled the industry's net export. In 1980, the combined nonruble-denominated net export of metallurgy and engineering was larger than that of entire industry. In 1981, once again metallurgy and engineering, respectively metallurgy with the petroleum and gas industry and the clothing industry, or engineering with the petroleum and gas industry and the clothing industry, had a combined nonruble-denominated net export larger than that of entire industry. And in 1982, any two among metallurgy, engineering, and the petroleum and gas industry had a combined nonruble-denominated net export greater than, or equal to, that of entire industry.

Thus it is evident that from 1979 to 1982 two material- and capital-intensive sectors in addition to engineering, namely metallurgy and the petroleum and gas industry, increasingly became the vehicles of Hungarian industry's

nonruble-denominated net export. The structure of nonruble-denominated net export was the most diversified in 1979. Then it clearly emerged that the expansion of net export could be imagined in two directions: based on metallurgy, or on several other industries producing mainly final products. The second alternative's feasibility gradually diminished in the subsequent years, and the structure of net export gradually became less diversified. Among the industries producing final products, only engineering remained a significant net exporter.

By the beginning of the 1980's the structure of Hungarian industry's nonruble-denominated net export thus became one in which the key role belongs to material- and capital-intensive sectors. In the 1960's and early 1970's, a serious argument in favor of the export-oriented development of the chemical industry and metallurgy was that they were processing raw materials from CEMA import, into export products that could be sold advantageously to capitalist countries [Szanyi, 1971, pp 184-185]. It will be worthwhile to examine how valid this argument remains today, and which sectors of heavy industry are able to attain significant nonruble-denominated net exports because their imported materials are supplied primarily from CEMA countries.[8]

In the chemical industry, CEMA import was 26.6 percent of total import in 1979 and 25.2 percent in 1982. It is particularly striking that, among the 20 enterprises investigated in this sector, there were only two in 1979 and merely one in 1982 with a larger CEMA import than nonruble-denominated import. Thus it is entirely obvious that this sector is far more dependent on capitalist markets in its import than in its export, and that it is by no means an area where significant CEMA import is converted into capitalist export.[9]

In metallurgy, CEMA import accounted for 64.0 percent of total import in 1979 and for 67.0 percent in 1982. However, this share was lower (59.2 and 60.9 percent respectively) in ferrous metallurgy and substantially higher (77.6 and 84.5 percent) in the aluminum industry. Thus CEMA import within ferrous metallurgy's import was not overwhelming either, and its share during the investigated period hardly changed at all. In the aluminum industry, however, the share of CEMA import rose, and this industry does indeed base its substantial capitalist export on processed material obtained from CEMA.

In the petroleum and gas industry, the share of CEMA import rose from 70.9 to 92.6 percent in 1979-1982, and at the same time its nonruble-denominated net export also rose considerably. This was the only sector within heavy industry that succeeded in shifting a significant proportion of its trade to the CEMA market in import, and to capitalist countries in export. Admittedly, this occurred at a time when the prices of imported CEMA (actually Soviet) hydrocarbons rose sharply, while the prices of the petroleum products exported to the West (primarily to Austria) declined. Thus the more favorably developing nonruble-denominated net export could be maintained only at substantial price losses in CEMA trade.

Thus the significant nonruble-denominated net exports of metallurgy (mainly of the aluminum industry) and of the petroleum and gas industry are indeed based on processing materials supplied from CEMA import. But the conditions of this conversion are worsening gradually where (as in the aluminum and the petroleum

industries) the import prices of the raw material or energy are rising sharply, but the export prices' rates of increase are not following this rise or only with a considerable lag. Certain computations indicate that the maintenance of the significant nonruble-denominated net export in these two material- and capital-intensive sectors is a source of serious losses for the national economy. Thus Hungarian economic policy's basic short-term priority (the maintenance of solvency in relations with the West) and the longer-term objective whose priority is now recognized also (the transformation of industry's structure) are in a contradiction that at first glance is difficult to resolve.

In engineering, the third sector that supports nonruble-denominated net export, the source of losses is not the conversion of imported materials into export, but the enterprise structure of net export. Namely, engineering's nonruble-denominated net export is highly concentrated among relatively few enterprises. One enterprise supplies nearly a third of engineering's nonruble-denominated net export; two enterprises supply about 45 percent; only four enterprises account for more than 65 percent; and 11 enterprises, for 92.6 percent. At least five of these 11 enterprises have well-known economic problems, and not only because of their capitalist export. (The large enterprise for vacuum engineering that heads the list found itself in an especially difficult situation in 1982-1983; turning it around will require money that cannot be provided easily from domestic sources.)

The production structure of the 11 enterprises is rather one-sided. The situation, simply stated, is that Hungarian engineering cannot dispense with the capitalist export of a few commodity groups that meet the technological level and requirements of decades past (vaccum-engineering products, railroad rolling stock, and cables), because it does not see in what other structure it could achieve a capitalist net export of similar magnitude. Worldwide the demand for the mentioned export items is declining or barely increasing, and thus it is becoming more and more difficult to meet the export targets even in the given structure. On the other hand, it is difficult to determine the direction in which the structure ought to be changed, because it is not easy to find engineering products that could replace within a short time the present volume builders of net export. The prospects of finding such products in the telecommunications and microelectronics industry are very slim at present, and it is difficult to imagine that capitalist net export could rise above 100 million dollars even in the production of highway vehicles, which may be regarded as the most promising sector within engineering.

Thus the nonruble-denominated net export that actually can be expected of engineering strongly depends on the performance of a few enterprises. Is this dependence typical only of Hungarian engineering, or can signs of it be found in the nonruble-denominated net export of entire industry as well?

First of all it is noteworthy that a narrow circle of Hungarian industrial enterprises transacts each year a substantial nonruble-denominated gross export. In 1982, for example, ten industrial enterprises had nonruble-denominated exports exceeding 50 million dollars. The largest exporter among them was a petroleum-industry enterprise with 131.3 million dollars of export. The representative large enterprise of the aluminum industry (120.7 million dollars) and

that of vacuum engineering (114.4 million dollars) ranked second and third respectively. The other seven enterprises had nonruble-denominated gross exports in the 51- to 81-million-dollar range. (They included three large enterprises in the chemical industry, three in metallurgy, and one in engineering.)

The data on overall foreign trade in years past show that the circle of enterprises ranking as the leading exporters to capitalist countries is entirely constant. The above ten enterprises were the first ten--although in slightly different sequence--also in 1981 and 1980. And in 1979, nine of the enterprises made the first-ten list, with an outsider ranking tenth.

The first four enterprises (one each in the paper industry, pharmaceutical industry, rubber industry, and metallurgy) among the top importers from capitalist countries were importing partially or entirely for the requirements of other enterprises. But ranking immediately after them each year were several enterprises that were also significant exporters to capitalist countries. Six of them were included regularly among the top 15 importers. Two of these six enterprises were in engineering, two in metallurgy, and one each was in the chemical industry and the petroleum and gas industry.

The situation is the same among the top enterprises in terms of industry's nonruble-denominated net export. Practically the same enterprises head the list each year, and their circle is about as constant as in the case of the top gross exporters. During the four years investigated, seven enterprises ranked among the top five.

Three of these seven enterprises were in ferrous metallurgy, one belonged to nonferrous metallurgy, and there was one each in engineering, the petroleum industry, and the chemical industry. With one exception, the top net exporters were large consumers of energy and raw materials, and they were enterprises making mostly final products.

Now it will be worthwhile to examine once again the extent to which Hungarian industry's nonruble-denominated net export is "enterprise-dependent," i.e., the combined nonruble-denominated net export of how many enterprises among the top net exporters would have equaled entire industry's nonruble-denominated net export.

Table 3. The Combined Nonruble-Denominated Net Export of the Top Three, Four and Five Enterprises, in Percent of Entire Industry's Nonruble-Denominated Net Export

	1979	1980	1981	1982
Top 3 enterprises	103.3	73.8	91.6	88.7
Top 4 enterprises	127.8	90.0	11.4	106.9
Top 5 enterprises	148.4	106.3	135.5	124.7

Source: Author's own computations.

The "degree of enterprise-dependence" of Hungarian industry's nonruble-denominated net export is unquestionably high. The top three enterprises in

1979, the top five in 1980, and the top four in 1981 had combined nonruble-denominated net exports exceeding that of entire industry jointly. Nor is it of secondary importance that as a rule these enterprises were the same ones each year. The question now is how does the sectoral and enterprise structure of nonruble-denominated net export rate from the viewpoint of Hungarian economic policy, and to what extent does this structure aid or hamper the development of a production and export structure that meets the requirements of the world economy and the domestic economy better than the present one does.

Net Export, Domestic Balance of Power

Stated in somewhat nonprofessional terms, nonruble-denominated net export tells us in the final outcome how much convertible foreign exchange a sector or enterprise earns for the national economy. This is the more important because the government and the economic-policy press usually call to our attention the objectives for which convertible foreign exchange is not available. The population, both as tourists and consumers, continuously feels this shortage of foreign exchange. During the past 28 years, economic policy repeatedly announced drives to economize on capitalist import. Before 1978--especially during the upsurge of trade with the West in the 1960's and early 1970's--the country's payments position was never so bad that this economization permeated also the relationship between economic management and the enterprises. Since 1978, however, a change has occurred in this respect, while at the same time --and this is an interesting development--the population's shortage of imports from capitalist countries, or of foreign exchange available for travel abroad, is not greater than previously (although it must be admitted that the costs of both imports and of the foreign exchange for travel have risen considerably).

Since 1978 and especially 1982, an entire series of direct and indirect regulations has made enterprises aware that capitalist foreign exchange is a much greater "bottleneck" than previously. Most enterprises cannot do anything against these restrictions, because they are practically unable to assert their own interests against economic management[10] (a small enterprise would have to employ very cunning arguments to make the continuation of its operations contingent entirely on the central government's licensing a certain amount of capitalist import). But there exists another circle of enterprises, far fewer in number but with large outputs and employing large work forces, and they have at their disposal a relatively large arsenal of instruments to assert their interests. And within this circle there is to be found also a third one, to whose members we have already referred above. They are the enterprises that are important net exporters in nonruble-denominated trade, and without them the national economy or Hungarian industry would be able to earn much less capitalist foreign exchange than at present.

Otherwise the overwhelming majority of these enterprises is highly vulnerable (they are very unprofitable[11] and/or strongly dependent on imports of raw materials or energy from CEMA, find themselves increasingly squeezed by diverging prices, etc.). But this vulnerability is rather relative when the national economy has a great need for these enterprises because of their considerable nonruble-denominated net export, and their seeming comparative advantages in nonruble-denominated trade. A situation may arise in such cases that provides food for thought already for two reasons. First, because such enterprises can

have good opportunities for asserting their interests against economic management, despite their business difficulties. And secondly, because it may be very difficult or perhaps impossible to implement structural policy against such enterprises.

The activity of every enterprise that transacts a substantial nonruble-denominated net export is decisive for the development of the economy's annual dollar balance of payments. In view of the national economy's short-term preferential objective of remaining solvent in our relations with capitalist countries, today these are Hungarian industry's "best" enterprises. Economic management dare not risk a decision (neither an individual one affecting some specific enterprise, nor a general one applicable to a wider circle of enterprises) that might force any one of these enterprises to reduce its capitalist net export. For the yardstick now being employed by necessity to measure economic performance rates higher--within very wide limits--the enterprise that is able, albeit uneconomically, to expand its dollar export or substitute dollar import through forint investments, than the enterprise that is able to earn forints very efficiently with forint investments (e.g., an enterprise that undertakes to alleviate the domestic housing shortage, quickly and efficiently[12]). The point in question is not that the operation of the latter enterprises may become impossible, but that the--envisaged--normative regulation of the economy or industry "may threaten" mainly these enterprises. The only normativity that can be achieved in relation to enterprises operating at a loss or to transfers of enterprise income to the state budget, for example, is one under which certain enterprises--the ones with substantial net dollar earnings--receive "more equal" treatment than the others.

If this happens, the other enterprises will be partially absorbing the inputs, measurable only in forints, of the enterprises operating at a loss but transacting substantial net dollar exports. The forints received from the proceeds of export sales or used to pay taxes will be "devalued" for the enterprises that are significant net exporters in trade with capitalist countries, but "revalued upward" for all other enterprises. It is warranted to place in quotes the envisaged changes in the forint's exchange rate because there will be no real change in its exchange rate. In an environment of seemingly consistent normative regulation, the enterprises that are substantial net exporters to capitalist countries will feel only that they are getting more forints than what they are producing, but the other enterprises will be getting that much less in forints. It may be assumed, of course, that normativity will apply truly equally to these other enterprises; for example, they may help to subsidize the substantial capitalist net exporters commensurately with their own tax bases.

The outlined situation cannot be termed at all less favorable than the present one, under which normativity has been achieved only to a very limited extent. Even with normativity applied to only a part of the enterprise sphere, it would be possible to significantly reduce sooner or later the state budget's participation in financing enterprises that operate at a loss. Simply because in this hypothetical situation the enterprises operating consistently at a loss would be able to survive only if they transact a substantial nonruble-denominated net export. There are few such enterprises. Naturally, there can only be a few.

It is worth dwelling briefly on this hypothetical situation, but not in order to make perceptible that normativity is necessarily incomplete. Instead, we should ponder whether monetary movements that the enterprises perceive in the same way as changes in the exchange rate would logically further reinforce the already existing situation. Specifically because the enterprise that experiences devaluation has an incentive to expand its export (and thereby probably to increasae its net export), while the other enterprises have an incentive to do the exact opposite. A tricky situation could arise in which the efforts to keep financially alive the enterprises that are substantial net exporters might become self-reinforcing, because capitalist net export is becoming concentrated increasingly in the same circle of enterprises. The process outlined thus far is perhaps not very close to reality as yet. But the fact that, according to the preceding section, there is hardly any change in the circle of enterprises with substantial capitalist net exports is a warning that the hypothesis contains nonetheless a measure of reality.

The enterprises that have substantial capitalist net exports can expect preferential treatment from economic management on a number of other questions as well, and this will further strengthen their privileged position. For economic management cannot afford to risk the possibility that these enterprises might attain significantly smaller capitalist net exports than in the past. However, this circle consists partially of enterprises whose financial situation is deteriorating permanently, but their position as significant capitalist net exporters offers them immunity as long as the national economy's present solvency problems persist.

In the light of what has been described so far, it will be worthwhile to ponder whether Hungarian industry is now faced, or may be faced in the future, with the danger that a practically enclave-like export sector could develop, one to which the enterprises would be (or already have been) assigned on the basis of their net foreign-exchange earnings, rather than on the basis of profitability, export-efficiency or structural-policy considerations.

The enterprises that are substantial net exporters in trade with capitalist countries could become practically "untouchables" for structural policy. However, most of them belong to sectors in which the world economy's constraints sooner or later will urgently require partial phasedowns. The fact hardly needs further proof that the national economy's persisting foreign-exchange problems have a structure-perpetuating effect due not only to the paucity of investment resources or productive import opportunities, but also because the structure can be transformed, and to no small extent, only at the expense of enterprises whose net foreign-exchange earnings are substantial. And in the short term this would significantly aggravate these problems.

One aspect of a more comprehensive economic strategy also deserves mention: If how the enterprises are ranked depends--whether necessarily or not--to a considerable extent also on which enterprise or sector imports less in comparison with its export, the danger of isolation from the world economy will increase, and in its wake so will the danger of a lag in technology, quality and competitiveness. The danger here is not only the fact of isolation itself, but--even before it sets in--also the spreading of views that regard isolation as a

natural consequence of the foreign-exchange problems (and a condition for preventing them from becoming more serious). Yet such views strongly influence economic policy as well, and after a certain time they shift economic policy to a course that they themselves desire.

FOOTNOTES

1. The study investigates capitalist net export through the development of nonruble-denominated net export. Trade with socialist countries (primarily with China and Yugoslavia) not denominated in transferable rubles represents the difference between the two concepts. From the viewpoint of foreign exchange, however, such trade too may be regarded as "capitalist." For the sake of simplicity, in the following "nonruble-denominated" and "capitalist" will be used as synonyms.

2. Thus the approach to the statistical material is based on organization, rather than on activity.

3. This in itself cannot be termed a harmful aspiration, but it is in conflict with the spirit of economic policy. When production is intended not for capitalist export but for capitalist import substitution, the criteria it meets will probably be less strict. Furthermore, production does not earn foreign exchange for the national economy; instead, it saves foreign exchange. Of course, the savings occur in comparison with the hypothetical costs rather than the real costs.

4. According to the computations that Eva Varhegyi performed using the data for 1976, practically every specialized subsector within light industry used a substantial share of its dollar earnings for its ruble-denominated export. In the leather and fur industry, as much as 97 percent of the ruble-denominated export stemmed from dollar import.

5. To curb domestic consumption, for example, the domestic consumer prices of petroleum products had to be raised repeatedly, whereas the logic of a price system geared to world-market prices would have required the exact opposite, because of the falling world-market prices of petroleum products.

6. The nonruble-denominated export of the petroleum and gas industry has risen since the late 1970's. A role in this export is played by the market allocations freed as a result of a drop of about 2.0 million tons in the domestic consumption of petroleum products, and also by a reduction of inventories originally from capitalist or CEMA import.

7. In other words, primarily which sectors give industry's combined net export when the net exports and imports of the other sectors are approximately in balance.

8. In relation to the chemical industry, Bela Balassa criticizes this argument very succinctly: "The chemical industry has the double disadvantage of consuming a large amount of scarce capital, and of requiring imported raw materials" [Balassa, 1978, p 37].

9. Sara Pasztor's computations also confirm this: a significant proportion of the national economy's 1979 import (24 percent of the socialist import, and approximately 29 percent of the capitalist import) was earmarked for the chemical industry [Pasztor, 1983, p 116].

10. Unless the enterprises make a suitably substantiated pledge to expand their capitalist export.

11. According to Deak (1983), a strong correlation exists between the extent of the production enterprises' export orientation and their domestic indebtedness.

12. Not to mention the enterprises that can earn forints very efficiently with dollar investments.

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CSO: 2500/421

GORYWODA INTERVIEW ON CEMA COOPERATION WITH U.S.

LD241831 Warsaw Domestic Service in Polish 1700 GMT 24 Jun 85

[Interview of Manfred Gorywoda, deputy premier and chairman of the Planning Commission of the Council of Ministers, by radio correspondent Andrzejewska, date and place not specified -- recorded]

[Text] [Gorywoda] As far as Poland is concerned, CEMA has been playing an increasingly prominent role in the stability of our development and in the normalization in our economy. The participation of CEMA countries in the contemporary world has been gradually increasing -- perhaps not as fast as it was 20 years ago.

[Andrzejewska] In view of the policy of restrictions, is CEMA open to cooperation with the EEC and the United States?

[Gorywoda] CEMA countries continue to stress their readiness to develop cooperation -- cooperation based on mutual benefits and on full equality of course. At the most recent CEMA summit last year in Moscow, the issue of openess was therefore very strongly emphasized, as was the willingness to broaden the exchange with the aforementioned basis. This does not mean that CEMA countries do not draw conclusions from the trade policy applied by Western countries, particularly by the U.S. Administration to socialist countries.

What are the conclusions? The conclusions are that on all these strategic courses there is a need for closer cooperation in order to prevent the use of economic cooperation and trade for political objectives, which recently has been done by highly developed countries, particularly by the U.S. Administration, and which has been felt most acutely by Poland in recent years.

CSO: 2600/838

DEPUTY PREMIER PREVIEWS CEMA SESSION

LD212255 Warsaw Television Service in Polish 1730 GMT 21 Jun 85

[No video available]

[Text] The 40th session of the CEMA with the participation of the government heads of member-states will begin in Warsaw on this coming Tuesday, 25 June. Today, Deputy Premier Janusz Obodowki met Polish and foreign journalists from the socialist countries in the Interpress Center. He is Poland's permanent representative in the CEMA and chairman of the Executive Committee.

[Begin recording] [Unidentified journalist] What will be the significance of the coming Warsaw CEMA session for further developing Poland's cooperation with the socialist countries?

[Obodowski] The session has and will have, to put it more precisely, serious significance because of the following facts: We want to synchronize more precisely our economic policy, mainly using legal coordination, but also with the help of plan coordination. Also within the coordination of plans -- it will arise from them -- we want to synchronize our investment policy. It will certainly be adopted; I say certainly but I can't anticipate it. (?Then) a great program of economizing on raw materials, fuels and energy. There will also be other issues discussed, in particular, which is routine and traditional, reporting on the activity of the Executive Committee in the recent period between the two sessions, the 39th and the 40th. During these sessions many new subjects have been raised in the CEMA and a number of programs worked out. Some documents have been signed and will be gradually and successively introduced. [end recording]

CSO: 2600/838

DAILY COMMENTS ON CEMA-COMMON MARKET COOPERATION

AU211513 Warsaw ZYCIE WARSAWY in Polish 17 Jun 85 p 6

[Commentary by Karol Szyndzielorz: "A Brussels Letter"]

[Text] The renewal of formal contacts between CEMA and the EEC at the end of last week took a rather unusual form. The Polish ambassador in Brussels delivered a letter to the chairman of the EEC Commission from the secretary of the CEMA Executive Committee. In this way, after a 10-year interval, the two largest economic formations not only in Europe, but in the world, are commencing discussions on future mutual relations.

It might seem paradoxical that this has only happened now. There are many reasons for this. A difference in approach and in views ought to be acknowledged as the most important reason. The EEC preferred to negotiate with each socialist country separately. The CEMA member-countries, however, are convinced of the necessity of presenting a common, coordinated stance towards the EEC. Talks between individual countries cannot take place on an equal footing, they are always a dialogue between a strong partner and a weaker one.

One heard it said in Brussels and other Western European capitalist that there was nothing to talk about with CEMA, for nothing could be gained by doing so. Because the economic community composed of socialist countries has no common customs tariffs, it cannot grant tariff relief. And because this is the case, the EEC would reap no benefits from talks.

CEMA, however, does not only concern itself with trade, but also with the coordination of economic development. Many of the consequences that flow from this have a European dimension to them, in accordance with the CCE Final Act, European countries ought to think and act with the interests of Europe in mind.

Speaking on behalf of the EEC, Jacques Delors affirmed that the EEC "had at no time departed from its constructive attitude towards CEMA." That these words will be met with coordinated actions is a belief which should be voiced. Our goodwill cannot be doubted. And the benefits, political as well as economic, might be truly great.

CSO: 2600/838

CAPITAL INVESTMENTS IN FIVE-YEAR PLAN VARIANTS EXAMINED

Warsaw TRYBUNA LUDU No 136, 13 Jun 85 p 6

[Article by Mieczyslaw Wodzicki: "Investments in the Five-Year Plan 1986-90"]

[Text] Reports from the investment front are disturbing. At the beginning of the year, an estimated 1,600 billion zloty was tied up in unfinished investment projects that require another 3,400 billion zloty to complete. This shows that the scope of the projects still under way is too broad and their completion would require outlays three times as big as the total annual investment expenditure in the country.

This must also be responsible for the fact that the average gestation period increased from 36 months in the 1970's to over 50 months now. An overextended investment front means delays in the execution of many vital projects as well as a growth in the social costs of building them.

Considerable changes have occurred in the outlay structure. The share of outlay in the so-called non-productive sphere (housing, education, hospitals, etc.), which accounted for less than 20 percent of overall investements in the 1970's, now accounts for over 30 percent of the overall spending in the socialized sector of the economy. Inevitably, the share of investment in the productive sphere and especially in industry has diminished. Whereas overall investment in the socialized sector dropped to 55 percent of the 1978 level in 1983, in industry this drop was even greater--down to 49 percent of the 1978 level.

This presents a difficult dilemma to the architects of economic policies. On the one hand, the considerable neglect over many years in developing the non-productive sphere affects the possibility of supplying diverse services to the population and justifies the concentration of the investment effort precisely in this area.

On the other hand, the low level of investment in the productive sphere prevents its indispensable modernization and at the same time fails to halt the physical depreciation of equipment thus threatening the possibilities of economic growth in the near future. It also signifies a limitation in the number of projects in the productive sphere in order to finance the development of the non-productive sphere.

For this reason, it is necessary to consider whether the emphasis should be on objectives that take a long time to fulfill or on the solving or urgent short-term tasks. Should we develop the production potential of the branches supplying raw materials and energy or should we instead support investments aimed at achieving economies in materials and energy? Should we build new plants or put money into maintaining the old ones?

Unless these questions are answered, we will be doomed to the continuation of the old investment program, with the resulting advancing depreciation of industry.

The depreciation is especially high in the electronic appliances industry--79.5 percent, the plastics industry--77 percent, computer equipment--74.6 percent, optical industry--72.2 percent, machine tools industry--71 percent, machines and equipment for light industry--70.3 percent, the tool industry--69.3 percent and the telecommunications industry--68.9 percent.

According to estimates prepared by the Planning Commission, the amount of wear of fixed assets in the national economy averaged 59 percent overall, which boken into different sectors gives the figures of 60 percent in industry, 69 percent in construction, 50 percent in farming and 55 percent in transportation and forestry. This means the usable productive capacity is less than it was five years ago. For this reason it is difficult and sometimes totally impossible to reach the 1980 production level with the available equipment.

The continued exploitation of worn out and aged installations has a negative impact on the efficiency of economic processes:

--the cost of maintenance of machinery goes up as it requires more frequent repairs,

--the efficiency suffers because of frequent breakdowns,

--the possibilities of increasing productivity diminish or in some cases actually falls,

--product quality deteriorates as machinery grows old.

The use of a large proportion of old machinery in industry is one of the reasons for the continued high consumption of energy and materials per unit of national income and also for excessive employment.

This demonstrates the need for a profound revision of investment spending, which should mainly serve the modernization and retooling of the existing plants. The aim of the move would be to achieve a systematic improvement of the condition of the productive assets, which is essential in view of the fact that the rising barriers to production growth may block further development altogether, long before the projects oriented toward meeting needs in the more distant future start producing any fruit.

The decisive matter from the point of view of introducing more rationally in the Polish economy is the restoration of equilibrium, which will be difficult to attain without a change in the structure of investments to the advantage of projects that guarantee fast results and not to tie up too much money for too long.

In point of fact, the practice of the last three years proved the validity of this concept. Prior to 1982, investments financed by enterprises from their own means accounted for a mere 5 percent of the overall investment outlays in the socialized sector of the economy; but now, this has risen to 34 percent.

This is an important systemic change which influences the course of investment processes. It creates an opportunity to reverse the tendency to date of investing in so-called development projects at the expense of modernization and retooling.

During the present discussion over the variants of the National Socio-Economic Plans it should be remembered that these tendencies are one of the basic reasons for the present advanced age of Polish industry. Studies have shown that enterprises spent over a half of their investment outlays on modernization.

One of the principal conditions for meeting the socio-economic goals defined in the different variants of the National Socio-Economic Plan is the arresting of the further depreciation of fixed assets, their modernization and, in some areas only, their growth.

The volume of needs will depend on which variant is selected in the course of public discussion. It will depend on whether we think of tomorrow or just concentrate on current needs.

The first variant envisages the satisfaction of the minimum socio-economic needs. It is estimated that merely in order to arrest the aging of industry, the indispensable outlay would have to amount to 5,300 billion zloty over the whole five-year period. At the same time it is necessary to start working now on projects which will only be completed after 1990. Here the spending is estimated at 1,058 billion. To this one should add the 3,250 billion zloty necessary for building 1,150,000 apartments, as well as chools and hospitals. All in all, investments in the nonproductive sector would account for 34 percent of overall spending (compared to 33.5 percent in the current quinquennium).

The attainment of the targets specified in the plan, such as 1.5 percent growth of per capita consumption per year, means that at least 9,600 billion zloty has to be earmarked for investments.

The second variant will make it possible to exceed the level of reconstruction of depreciated assets and to accelerate the growth of the level of consumption by 1.8 percent a year. However, this requires the spending of 400 billion zloty more than in the first variant on investments, of which 290 billion would have to go to the development of industry and the rest of the social

infrastructure. However, the adoption of this variant would make it necessary to curb consumption somewhat in the first two years of the quinquennium in order to be able to increase it dynamically towards the end of the 1980's.

The third variant envisages the acceleration of the pace of returning to earlier levels of consumption. The creation of a change of better living, a growth in consumption of 2 percent a year calls for increasing investments by 300 billion zloty more than in the second variant, most of which would have to be spent on the development of industry.

The different variants of the plan envisage that in the years 1986-1990 investment activity will focus on:

--the fast completion of industrial investments already under way;

--the arresting of the aging of many important branches of industry;

--the introduction of structural changes in the national economy oriented toward an increased efficiency and a growth of exports.

Such an approach to the aims of the investment policy for the next five-year period is dictated by the country's economic needs and also by the experiences of the recent period. Without a systematic investment of specified sums of money for modernization, quite a lot of firms would soon be forced to reduce the production of goods for the market. It would also be increasingly difficult to sell Polish goods abroad. At present the losses caused by the production of low quality merchandise run into hundreds of billions of zloty. An increasingly poor role is played by products with outdated designs which have not changed for many years.

Be investing in industry we invest in equipping our apartments. It will also depend on this investment whether in a few years' time we shall diminish the hazard of working in industry and replace man which machines in the most dangerous jobs.

Let us remember, too, that in the next quinquennium the workforce will only increase by 325,000 people, which means that machines will have to account for the bulk of production growth.

A greater scope for the modernization of the economy will not only make it possible to modernize products but also to complete the investment projects already under way without more delay. Last year the number of projects under construction decreased by over 1,000. This is a good sign and a confirmation of the validity of the adopted principles of the new investment policies. The spare capacity of construction enterprises will then be used in the closing years of the decade for building flats, schools and hospitals. The number of such facilities therefore will also be dependent on the variant that is selected.

Variant I envisages 5,100 billion zloty in every year of the five-year period being spent on consumption and nonproductive investments, variant II puts the

figure at 5,300 billion and variant II at 5,500 billion. Let us bear in mind that, for example, 600 billion zloty can buy some 200,000 apartments, 90,000 hospital beds or 60,000 places in schools.

As can be seen, there is plenty to think about. Should we choose the defense of the present standard of living or rather set our sights on bigger targets? The latter option certainly requires more effort and more concentration on the ways and means, but in the end it may produce greater advantages. The defensive variant does not offer the prospect of improvement in the future.

So, what is our choice?

CSO: 2020/154

DRAFT LAW ON JOINT-OWNERSHIP COMPANIES ENDORSED

Warsaw RZECZPOSPOLITA in Polish 19 Jun 85 p 2

[Excerpts] Three Sejm commissions for Planning, Budget and Finance, Legislative Procedure, and Workers Self-Management, yesterday endorsed at a joint session a government draft law on joint-ownership companies.

The legislation which introduced the economic reform provided for the foundation--by way of agreement--of enterprises which would be partly owned by public enterprises and partly by other owners. The law on public enterprises speaks of cooperative and nongovernmental organizations in this connection. The draft law now in the legislative process will furnish the necessary legal basis for putting these provisions of the reform into practice. Experience gained so far in the reform's implementation shows that the proposed law should be expanded to embrace other corporate public bodies such as the treasury, research institutions, or different non-governmental community organizations empowered to conduct economic activities.

The discussion during the session introduced many new ideas. Among other things, the commissions accepted a proposal by a representative of the All-Poland Trade Union Alliance (OPZZ) that trade unions should explicitly be granted a part of play in such companies.

CSO: 2020/154

POLISH-SOVIET COMMISSION FOR COOPERATION MEETS

Warsaw ZYCIE WARSZAWY in Polish No 146 25 Jun 85 p 1

[Excerpts] On 24 June, the Polish-Soviet intergovernmental commission for cooperation in industry, science and technology met in Warsaw for its 28th session. The protocol from the debates was signed by the chairman of the two delegations, Deputy Premier Janusz Obodowski and Deputy Chairman of the USSR Council of Ministers Nikolai Talyzin. The Soviet ambassador to Poland, Aleksandr Aksyonov, was present.

The protocol sums up the commission's view of bilateral economic and scientific relations. The commission assessed positively the fact that the right conditions have been provided for "the long-term program of economic and scientific cooperation between Poland and the Soviet Union up till the year 2000" which was signed on 4 May 1984. Broad work has been started in fulfillment of a "Plan of actions conducive to the implementation of the long-term program."

The commission considered a draft Polish-Soviet program for research and development undertakings, underlining the great significance of R&D in order to speed up processes which decide the economy's overall efficiency, including the expansion of electronic and automatic facilities, the substitution with new materials of those that are in short supply, the introduction of new production processes including biotechnological ones, fiber optics, and new ideas in power generation and fuel use.

The status and results of work on the coordination of national socio-economic plans for the next five-year period were also considered. The two countries will continue in their endeavors to expand cooperation and trade over and above the level achieved up to now. The two planning bodies agreed on some concrete decisions concerning the technical quality of goods which are to be supplied to each other in part fulfillment of the 1986-90 deliveries.

During its 28th session, the commission discussed the development of direct cooperation of enterprises and research institutions of the two countries. One hundred eighty Polish and Soviet enterprises have established direct cooperation. Eight-three research institutions have done the same, and at present they are engaged in resolving 37 R&D tasks. The 29th session is scheduled to take place not, as the tradition for these annual meetings would require, in 1986, but already toward the end of this year. This is necessary because of deadlines and the range of work on defining the substance and the form of long-term bilateral cooperation.

CSO: 2020/155

INSPECTION BOARD CRITICAL OF ECONOMY'S PERFORMANCE

Warsaw RZECZPOSPOLITA in Polish No 147, 26 Jun 85 p 2

[Text] On 25 June, Lieutenant-General Tadeusz Hupalowski, chairman of the Supreme Board of Inspection (NIK), chaired the meeting of the Board's Council devoted to the analysis of the execution of the state budget in 1984, and to the Council of Ministers' report on the execution of the 1983-85 National Socio-Economic Plan in 1984.

Both the Council of Ministers and the Supreme Board of Inspection were critical of the state of the national economy in 1984. The two critical documents will soon be submitted to the Sejm.

In general, 1984 was not a bad year. The national income produced increased by 5.9 percent, owing to an increase in net production in all branches of the economy, in industry and agriculture in particular. Market supplies, especially foodsupplies, improved further. The rate of inflation declined. A larger than anticipated growth in the national income permitted a slightly faster than planned growth in consumption and investment. Nevertheless, the total budgetary income grew at a rate lower than in the previous year and lower than budgetary spending. The imbalance in the budget deepened further.

The government documents analysed this state of the economy critically. The NIK Council meeting also concentrated on the dark side of things, on what makes improved management difficult. In many cases NIK's remarks were far more critical than those of the Council of Ministers, this was justified by the results of NIK controls carried out in all sectors of the national economy.

In the draft text of the NIK's position to be presented to Sejm deputies, the NIK Council emphasized the fact that the state budget's growing debt with the National Bank of Poland was the result of the lessening of the tax burden on state enterprises. Thus the financial resources at the disposal of those enterprises have increased markedly. The growth in accumulated profits resulted mainly from an increase in prices for goods and services, requested despite the ban on unjustified increases in contractual prices (negotiated between suppliers and retailers--editor's note). This means that a growth in earned surplus did not result from an expected improvement in management. NIK inspections revealed that over 40 percent of contractual and regulated prices were fixed in violation of the binding rules.

It was emphasized that in 1984, certain industries and branches had introduced new wage systems, which, however, were not effective enough as regards improved productivity and did not produce the expected results. Relation between wages and the amount and quality of work was not strong enough. NIK observed cases of mismanagement, waste and violations of financial discipline. Exports declined and, on many occasions, the maintenance of the market was threatened by the lack of improvement in the quality of manufactured and food products.

Controls also revealed frequent cases of investors' accepting unfinished buildings, the quality of which left much to be desired.

In its document, the NIK Council saw the necessity to intensify work on rationalization of prices and to cut and control subsidies. Such necessity arose from the ascending number of businesses running at a loss and thus of the growing number of enterprises showing, so-called, negative accumulation. The NIK Council suggested abandoning unjustified subsidies, revisioning tax relief and imposing discipline in budgetary expenses.

CSO: 2020/156

SHORTAGE IN COAL SUPPLIES REPORTED

Warsaw RZECZPOSPOLITA in Polish 5 Jul 85 pp 1, 5

[Text] What the experts have long predicted has finally happened. A coal deficit has occurred in Poland and the previous winter only hastened this outcome.

In the face of increasing demands for this fuel coupled with limited possibilities for increasing production, the only way to balance the fuel-energy supply equation is the consistent realization of government and institutional energy conservation programs.

In Katowice under the leadership of Vice Premier Zbigniew Szalajda, an interagency conference met on 4 July to address the matter of balancing supply and demand for fuels and energy in 1985. During the conference, consideration was given to whether and to what extent circumstances have changed since this issue was addressed by the Presidium in early April 1985 in its 1985 National Annual Plan.

The accomplishments of the coal mining industry were praised, which in spite of difficult circumstances at the beginning of this year, succeeded in maintaining the pace of production and delivered roughly 95.5 million tons of fuel to the economy during the first 6 months of 1985. These targets were met with roughly 6,000 fewer people employed in the mines.

Also mentioned were railroad activities, which transported over 78 million tons of coal from Silesia and Zaglebie and basically provided all of the rail cars asked for by the coal miners. It should also be noted that during the first half of this year, the Polish State Railroads had an average of 7,000 coal cars less than during the same period last year. This year there is a tautness in the overall fuels and energy supply situation but hard coal accounts for the biggest shortage.

The Chief Inspectorate of the Power Industry issued instructions on limiting coal use. These will affect 539 plants using at least 12,000 tons of coal per year. It is estimated that the result of this conservation of coal will save about 800,000 tons of coal in the last half of this year. However, as indicated by Vice Premier Szalajda, the plants have not received the particulars of the instructions and the Coal Sales and Distribution Center has not

yet received orders on how much coal it may distribute and to which customers so that they may fill their own reserves and be able to carry on uninterrupted activity. In the present situation it is necessary to step up the sale of brown coal to small-scale industrial consumers and to private consumers. Sales of 800,000 tons of brown coal were projected for this year, but in the first half of this year barely 186,000 tons were sold. Firewood sales also are ungratifying.

CSO: 2600/877

BRIEFS

JARUZELSKI RECEIVES SFRY ECONOMIC DELEGATION CHAIRMAN--Wojciech Jaruzelski has received Spasoje Medenica, a member of the Federal Executive Council of Yugoslavia and chairman of the Yugoslav side of the economic and scientific-technical cooperation committee who is on a visit to Poland. An appraisal of the implementation of the decisions adopted during the visit to our country by Yugoslav Premier Milka Planinc was carried out. Matters connected with the return visit which is being prepared by Premier Wojciech Jaruzelski to Yugoslavia were also touched on. [Text] [Warsaw Domestic Service in Polish 2100 GMT 20 Jun 85 LD]

JARUZELSKI, NESTROWICZ SEE PRC ASSEMBLY GROUP--Premier Wojciech Jaruzelski today received an official delegation of the All-China Assembly of People's Representatives headed by Wang Renzhong, vice-chairman of its standing committee. Tadeusz Nestorowicz, minister of foreign trade also met the delegation. Possibilities of development of Polish-Chinese economic and trade cooperation in the context of recently signed 5-year trade agreement between both countries were discussed. [Text] [Warsaw Domestic Service in Polish 1800 GMT 20 Jun 85 LD]

GORYWODA'S VISIT AT '1 MAY' PLANT--On 4 July, Manfred Gorywoda, vice premier and chairman of the Planning Commission under the Council of Ministers, acquainted himself with the "1 May" carbon electrode plant at Raciborz, its current technical and production problems, technologies, as well as the social and living conditions of the workers at this industrial plant which has already been in operation for 90 years. Topics discussed included the plant's modernization and remodeling, which will provide better working conditions for personnel and increase production. [Text] [Warsaw TRYBUNA LUDU in Polish 5 Jul 85 p 2]

BRITISH COOL TOWARD AGRICULTURAL PLAN--The British Government is skeptical of attempts to raise funds for the Church-sponsored agricultural foundation in Poland. Several months ago, during Cardinal Glemp's visit to Britain, the press signalled a clearly cool attitude on the part of the UK authorities toward attempts to collect funds for this purpose. Now the matter has come up once again as the Common Market tries to allot a small sum for this foundation. [Text] [Warsaw RZECZPOSPOLITA in Polish No 141, 19 Jun 85 p 7]

MORE POZNAN FAIR DEALS--At the recent International Trade Fair at Poznan, "Spolem" of Warsaw concluded deals with several foreign companies. As a result, the Warsaw consumer goods market will receive an infusion of imported goods valued at 600 million zlotys. The Polish side offered, among other things, honey, dried onions, 250,000 meters of textiles and 500,000 cases. In return Poland will receive shirts, undergarments and knitwear. [Text] [Warsaw RZECZPOSPOLITA in Polish 5 Jul 85 p 4]

ENGBLOM'S VISIT--Goeran Engblom, executive secretary of the International Trade Center (ITC) of UNCTAD/GATT, visited Poland and discussed with the Ministry of Foreign Trade the possibility of opening an ITC bureau in Poland. The Polish side also offered to organize training schools for businessmen from developing countries. Engblom also attended discussions at the Ministry of Foreign Affairs and the Polish Chamber of Foreign Commerce. [Text] [Warsaw ZYCIE WARSZAWY in Polish 20 Jun 85 p 2]

POLISH-TURKISH COOPERATION IN MINING--A delegation of specialists from the Turkish coal mining association "Zouguldak" paid a one-week visit to Poland. The delegation members familiarized themselves with advanced technologies used in the Polish coal mining industry. The Turkish guests visited, among other places, the Central Miners' Rescue Station in Bytom and acquainted themselves with the construction of the new "Czeczott" mine. It is worth noting that Poland's miners are digging a shaft in one of Turkey's mines. It is expected that in the future they will participate in the construction of a mine at Amasra. On 3 July in Katowice the Turkish Mining delegation was met Czeslaw Piotrowski, Minister of Mining and Energy. Discussions centered on the problems of cooperation between Poland and Turkey in the coal industry. [Text] [Warsaw TRYBUNA LUDU in Polish 4 Jul 85 p 2]

ONGOING "KATOWICE" STEELWORKERS EXPANSION--At the "Katowice" steelworks, work continues on the building of three economically important installations, the construction of which is being supported in parg by credits and deliveries of certain materials and equipment from the Soviet Union. Work is under way on the construction of a modern coal plant with four batteries, the first of which will go into operation by the end of next year, a rail heat treatment shop, ready to begin initial production by the end of this year, as well as the large number three furnace with a capacity of 3,200 cubic meters. Several thousand men from numerous contractor firms are at work on the construction sites of these major capital projects. A high level of the work is moving ahead at a rapid pace everywhere one looks. Manfred Gorywoda, Vice Premier and Chairman of the Planning Commission under the Council of Ministers, has acquainted himself with the progress of the work. [Text] [Warsaw TRYBUNA LUDU in Polish 4 Jul 85 p 2]

CSO: 2600/861

BRIEFS

KOSOVO UNEMPLOYMENT--According to the Kosovo SIZ (self-management interest community) for employment, 113,000 people are unemployed in Kosovo at present; 60 percent of these are skilled, and largely young, people. In the current medium-term period 53,000 workers were planned to be hired, but this plan is not expected to be met. The biggest possibility for accelerating employment in realizing the already established socio-economic development program lies in producing finished products in the metal processing industry, in agricultural and food production, and in small-scale business. [Excerpt] [Belgrade PRIVREDNI PREGLED in Serbo-Croation 19 Jun 85 p 12]

JOINT BANK IN ZURICH--Three large associated banks, the Economic Bank of the Sarajevo Associated Bank, the Vojvodina Bank of the Associated Bank in Novi Sad, and the Associated Kosovo Bank in Pristina have agreed to form a joint representative facility in Zurich, Switzerland. In explaining the decision to establish the joint facility, it was said that financial-commercial business in Switzerland is increasing and amounts to more than 27 million Swiss francs. Kosovo commodity trade with Switzerland consists largely of imports of special equipment and machines. The value of imports from Switzerland amounts to 282 million dinars. But exports from Kosovo to Switzerland amount to only 35 million dinars. In addition, there about 10,000 workers temporarily working in Switzerland [from Kosovo] who do not have large foreign exchange savings. It is significant that this agreement is one on opening a joint facility, in contract [to the general practice of] each opening his own banking firm. This is a real contribution to economic stabilization and...an example for commercial enterprises. [Excerpt] [Pristina JEDINSTVO in Serbo-Croatian 5 Jun 85 p 6]

USE OF AUSTRIAN CREDITS--Up to now, through the associated economic bank of Sarajevo as coordinator, over 933 million Austrian shillings have been made available, since the Bern Agreement of 1983, and 801 million shillings have been used. Work organizations in Slovenia have made most use of them (248 million or 36 percent), followed by Serbia (233 million, or 24 percent), Bosnia-Hercegovina (176 million or 18 percent), Vojvodina (82 million or 8 percent), Croatian (73 million or 7 percent), and Macedonia (51 million shillings or 5 percent). Since the total credit will not be used by the end of June, the Sarajevo bank will ask for an extension to the end of this year. [Excerpt] [Belgrade PRIVREDNI PREGLED in Serbo-Croatian 18 Jun 85 p 3]

AVERAGE WAGES--In February net personal incomes in the socialized sector averaged 30,909 dinars [per month] or nominally 60.4 percent more than in February 1984. But in real terms net incomes dropped 0.7 percent in this period. Namely, in order for real incomes to remain on last year's level, they would have to have a nominal increase of 61.65 percent. In real terms, average personal incomes increased only in Montenegro (by 4 percent) and Slovenia (by 3.5 percent). [Excerpt] [Belgrade EKONOMSKA POLITIKA in Serbo-Croatian 3 Jun 85 p 29]

EMPLOYMENT IN SOCIALIZED SECTOR--At the end of February 1985 there were 6,265,400 employed in the socialized sector, or 2.3 percent (about 140,000) more than a year earlier. This is nevertheless not enough to absorb the total inflow of [potential] new workers, largely young people graduating from school. Thus, the number of registered unemployed in Yugoslavia at the end of February was about 1,030,000. Most of the employed are in Serbia proper (1,583,000), with Vojvodina employing 587,800 and Kosovo 204,800; followed by Croatia (1,486,500), Bosnia-Hercegovina (966,800), Slovenia (808,100), Macedonia (478,900) and Montenegro (149,500). [Excerpts] [Belgrade EKONOMSKA POLITIKA in Serbo-Croatian 10 Jun 85 p 30]

WORKERS ABROAD--According to estimates of the Federal Bureau for Employment, at present 601,340 Yugoslavs are working abroad with 412,250 family members--hence, a total of 1,013,590. Most are working in West Germany (612,800), followed by Austria (131,000), Switzerland (85,940), France (68,310), Sweden (50,000), Italy (18,000), Great Britain (15,000), Holland (14,500), Denmark (7,340), Belgium (6,000), and other European countries (about 4,700). Outside of Europe there are about 61,600 Yugoslavs, most in Australia (27,700). It is estimated that between 1975 and 1984 about 566,000 Yugoslavs returned from working abroad. Although little is known of the fate of returnees, the SIZ (self-management interest community) for employment records show that 60,994 returnees were hired between 1976 and 1984; last year 18,282 were registered as unemployed. [Excerpts] [Belgrade ECONOMSKA POLITIKA in Serbo-Croatian 24 Jun 85 p 18]

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